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# FORMS OF OWNERSHIP AND A COST-EFFECTIVE SHIPBUILDING INDUSTRY

MAY 1979

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# FORMS OF OWNERSHIP

# AND A

# COST-EFFECTIVE SHIPBUILDING INDUSTRY

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This study reviews and analyzes the potential impact on shipyard efficiency of the three modes of ownership possible in the United States: (1) a fully nationalized shipbuilding industry; (2) an industry organized as a public utility; (3) a privately owned and conventionally financed industry. The main concern of this project is the least cost construction of naval combatants.

Nationalizing the industry would most likely require the granting


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20. of Civil Service status to all shipyard employees or the purchase of private yards by the Navy for conversion to GOCO's. From a business perspective, nationalization would shift the full financial risks involved in shipbuilding from the private sector to the public sector. Such a policy does not make economic sense in light of the low mid-term demand for new ships.

Creating a shipbuilding public utility would not, in and of itself, enhance the productivity of the industry except as the government (Navy and/or Marad) fully guaranteed in the long term the full and profitable utilization of the industry's facilities. Essentially, the creation of a shipbuilding utility would have the same risk shifting effect on the industry as its overt and complete Nationalization.

Private ownership is the more conventional business form in American economy. Although the U.S. government pays the bill for a major if not significant portion of the shipbuilding industry's output, the industry is still responsible for capital formation and for the profit and loss impacts on its ability to efficiently provide goods and services to the government.

If a cost effective shipbuilding industry is desired, the private ownership of the industry still appears to be the best technique for the least cost construction of Naval combatants and non-combatants. Irrespective of who owns the industry, the most pressing need within the industry is for cost control. To accomplish this, a new set of incentives is needed. This issue is discussed in the report.

As an integral part of the reports, an overview of Nationalization, an evaluation of the regulatory aspects of the public utility approach, and current status reports of the Japanese and Western European shipbuilding industries are included.

## TABLE OF CONTENTS

### PART ONE


| | | Page |
|---|---|---|
| Chapter I: | Executive Summary | 1 |
| Chapter II: | Modalities of Ownership and Cost Effectiveness | 4 |
| Chapter III: | General Discussion | 19 |
| Chapter IV: | Thin Capital and the Defense Industrial Base | 21 |
| Chapter V: | The Two-Tiered Payment System and the Defense Industrial Base | 27 |
| Chapter VI: | The Special Case of Newport News and Electric Boat | 32 |


### PART TWO


| | | |
|---|---|---|
| Appendix A: | An Overview of Nationalization | A-1 |
| Appendix B: | An Evaluation of the Public Utility Approach for Regulating the Shipbuilding Industry | B-1 |
| Appendix C: | Current Status of the Japanese Shipbuilding Industry | C-1 |
| Appendix D: | The Current Status of the Western European Shipbuilding Industry | D-1 |

# PART ONE

## CHAPTER I: EXECUTIVE SUMMARY

### INTRODUCTION

This study ~~was designed to~~ review and analyze the potential impact on shipyard efficiency of the three modes of ownership possible in the United States: a fully nationalized shipbuilding industry; an industry organized as a public utility; and a privately owned and conventionally financed industry. Particular emphasis was given to an analysis of the potential for creating a shipbuilding public utility since it was initially believed that the scope and content of the regulations imposed on a utility might help to induce a more cost-effective industry. This, indeed, is the <u>main</u> concern of this project; the least cost construction of naval combatants. Based upon the analysis ~~that follows, we do not~~ the writers believe that changing the mode of ownership of the industry or its capital structure will (not), <u>by itself</u>, solve the underlying problem. Their Our analysis suggests that cost control is a management function distinct and apart from the ownership function, and should be so treated. In this regard, their ~~our~~ analysis now suggests that either nationalizing the industry or creating a shipbuilding utility <u>as opposed</u> to the continuing private ownership of the industry may serve to increase shipbuilding costs both in the short- and long-term. The reasoning behind this judgment is set forth below.

### NATIONALIZATION

Nationalizing the industry would most likely require the granting of Civil Service status to all shipyard employees. Based upon past history, such an action might well commit the government to the potential maintenance of an excessively large or costly labor force if, after nationalization, it either failed or was otherwise unable to close down redundant or excessively manned facilities. This has allegedly happened in those yards that are now, in fact, "nationalized", i.e., the Navy's shipyards. From a

business perspective, nationalizing the industry or any segment of it, would shift the full financial risks involved in shipbuilding from the private sector to the public sector. In light of the low mid-term demand for new ships, such a policy does not now seem to make economic sense.

An intermediate step would be the purchase by the Navy of a number of privately owned yards for their subsequent conversion into GOCOs. Although this would relieve the private sector of substantial investments in what is now a marginally profitable industry,[1] it would not necessarily provide any spur to the more cost effective construction of naval ships. As with full nationalization, it would shift most, if not all of the financial risk from the private to the public sector. Conceivably, it could lead to requests for similar treatment by other segments of the defense industrial base, and, in particular, those groups that are only moderately profitable.[2]

## A SHIPBUILDING UTILITY

Creating a shipbuilding public utility would not, in and of itself, enhance the productivity of the industry except as the government (Navy and/or Marad) fully guaranteed in the long term the full and profitable utilization of the industry's facilities. Since maximizing the use of an industry's capacity is an integral part of the utility regulation, and since the government is the prime if not sole customer of the shipbuilding industry, the creation of a shipbuilding utility would have the same risk shifting effect on the industry as its overt and complete nationalization. The two key differences between nationalization and the creation of a public utility are (1) the fact that in the utility mode the firm's management would remain a private sector responsibility and (2) that the public utility must rely for its financing on conventional private market sources. These and other issues are discussed in Appendix B (Public Utility Theory) and Appendix A (An Overview of Nationalization).

## PRIVATE OWNERSHIP

This is the last alternative currently available to the decision maker and is, of course, the more conventional business form in the American economy. The key virtue of private ownership may be found in the fact that the private sector normally assumes all of the business and financial risks in maintaining an industry. Because the defense industry in general, and the shipbuilding industry in particular, relies primarily on the government for its sales and is also subject to stringent control in terms of the ASPRs and other acquisition regulations and contractual obligations, a case can be made for maintaining that the industry is either quasi-nationalized or a quasi-utility. The government pays the bill for a major if not significant portion of the industry's output, but the industry is still responsible for capital formation and for the profit and loss impacts on its ability to efficiently provide goods and services to the government. In sum, if a cost effective shipbuilding industry is desired the private ownership of the industry still appears to be the best technique for the least cost construction of naval combatants and noncombatants.

The roots of the industry's current inability to produce to cost and schedule are, we believe, only peripherally related to ownership form. Irrespective of who owns the industry, the most pressing need within the industry is for cost control. A major effort to attain full control of costs is essential regardless of whether the industry is nationalized, recast as a public utility, or allowed to remain in private hands. In order to accomplish this, a new set of incentives is needed. This issue will be discussed in the report that follows.

# CHAPTER II. MODALITIES OF OWNERSHIP AND COST-EFFECTIVENESS

## THE PUBLIC UTILITY CONCEPT

We do not now believe that it would make sound economic sense to recast the U.S. shipbuilding industry as a public utility. The following is offered in support of this judgment.

1. Public utilities are provided by law and by regulation with significant control over the market that they serve. This reflects the fact that they are in a market for which there is a predictable long-term demand for their output and for which there are few, if any, economically viable substitutes. Further, and perhaps most important of all, public utilities are an integral part of our economic and physical infrastructure. We simply cannot do without the services that they provide. Because of this, a public utility can normally develop a financial and operating structure which allows it to remain profitable and independent of government subsidy. They are, in fact, required to do so. In general, utility rates can and must be set high enough to cover both short-term operating costs and long-term financial needs.

   The shipbuilding industry, to the contrary, has virtually no control over the market that it serves; the government is the industry's key customer. In addition, the demand for ships is, at best, episodic and in the case of non-combatants is more often than not due to international pressures beyond the control either of the industry or of the U.S. government. Forecasting demand under these conditions is, at best, a conjectural enterprise. More directly, it needs to be recognized that merchant ships

are an interdependent part of a world wide commodity market that is not susceptible to the form of regulation normally imposed on a public utility.

2. Public utilities are, by their very nature, capital intensive and are able to reap significant economies of scale, provided only that they are granted the requisite monopoly rights by the government. Indeed, utilities are designed to act as surrogates for the government. They do so by providing services to an entire community while shifting the capital formation and operating cost burden from the public sector to the private sector. The quid pro quo for this shifting of risk is rate control designed to reasonably guarantee cost-effective access to the capital markets. The shipbuilding industry, to the contrary, is primarily labor intensive. Opportunities for economies of scale within the industry are minimal. In recent years some yards, in fact, have suffered from diseconomies of scale. Utilities become cost-effective through the efficient use of technology. Shipyard efficiency is based more on the astute management of labor than on technological or production-oriented factors. Short of the large-scale serial production of ships such as was experienced during WWII, there is little likelihood that the U.S. shipbuilding industry can markedly improve its efficiency by the adaptation of technological or production-oriented devices. Because of this, and because of the long period of time over which ships are built, there is not a "rate setting process" per se that is or would be applicable to the shipbuilding industry.

3. The public utility provides services to a multiplicity of buyers, no one of whom by himself can significantly affect the demand for the utilities output, or its price

and cost structure. Further, the industry enjoys the privileges of a legal monopoly and, as such, is reasonably free to establish its prices and costs subject only to what must at best be termed as regulatory oversight. The thrust of the oversight is to balance the utilities' needs for funds with the customers' needs for services.

Although the monopoly rights of the utility are not fully pervasive, they are, none the less, reasonably complete based on the fact that the utility controls the physical infrastructure needed to deliver the product to the consumer. Although competition is possible, the costs of entry are high. Further, the consumer would be discommoded by new entrants into the industry such that, for the consumer a change of vendors might not be cost-effective.

As noted above, the shipbuilding industry has but one customer. The U.S. government regulates the economic activities of the shipbuilding firm through the medium of the ASPRs and other relevant regulations and contractual obligations. Because of this, it could be maintained that the shipbuilding industry, for other than its capital structure and financial procedures, functions in fact as a public utility, i.e., as a surrogate for the government. This argument is appealing, but the weight of evidence is to the contrary.

4. First, with the possible exception of nuclear construction, there are virtually no economic or technological barriers to entry into the industry. Other than Litton Pascagoula, Electric Boat, and Newport News, the industry is populated by relatively small, thinly capitalized firms.[3] Indeed, if taken as separate

entities, the "Big Three" are themselves thinly capitalized. Of these only Newport News is owned by a large, traditionally financed firm. In keeping with the general condition of most defense-oriented firms, both Litton and General Dynamics can be considered to be thinly capitalized. This, in our opinion, may be one of the key "ownership" factors forcing the alleged lack of efficiency within the industry. Because of the labor intensive nature of the industry, and its lack of reliance on expensive or sophisticated technology, firms can and do enter the market based on perceived market opportunities. Capital is not a barrier to entry.[4] In the case of shipbuilding, then, the key barrier to entry is the customer. By virtue of its ability to proscribe demand and create specialization within the industry, the government can either open up or close off entry to the industry. By exercising its rights in what has been termed a bilateral monopoly, the government can "force" the price and cost structure of the industry subject only to the political constraint that it not push firms out of business.

Last, and perhaps most important of all, the shipbuilding industry can neither determine the demand for combatants nor the construction specifications for these ships. Unlike the typical consumer of the output of our utility, the Navy is an "informed buyer." For reasons of national interest, the Navy must remain so. This particular fact diminishes the potential for self-determination, i.e., "market control," that is an inherent factor in most private industries and is particularly relevant to the successful management of a public utility.

The shipbuilding industry, then, does not have the general characteristics one would normally expect of a public utility.

Short of new legislation, there can be no legal or economic barriers to entry into the industry. The industry is neither capital intensive nor heavily capitalized. Nor is there an easily controlled, quantitatively dynamic market for new ships. Further, because of its history of marginal profits, the industry cannot possibly gain the access to the capital markets that is the hallmark of the public utility. In addition, because of the profit limitations inherent in the defense industry it cannot avail itself of the sequential debt and equity financing that characterizes a public utility.

The central issue, thus, is the requirement that a public utility be self-financing, and its built-in ability to be self-financing because it serves an economically stable market which it controls by legal fiat.

For the shipbuilding industry to be recast as a public utility, as its sole customer, the government would have to accept the burden of providing the industry with sufficient sales volume to effectively use its capacity. In this instance, one of two realities would have to obtain; either the government would have to increase the demand for ships in order to fully utilize existing capacity, or the government would have to close down facilities that are, based on forecasted demand, redundant.

Increasing the demand for ships would either require a greater expenditure of federal monies than is now contemplated, or would require a change in maritime and foreign policy, i.e., cargo preference legislation. The rub here is that both these actions would by themselves provide the incentive for the privately owned shipbuilding industry to develop cost-effective construction techniques. Given the massive sums invested by the industry since 1970 in new plant and equipment, the industry should be capable of meeting virtually any demand created by either of the two possibilities noted above.[5]

The unfortunate fact, however, is that for political and economic reasons, an increase in the demand for ships is unlikely. Because of this, the utility format for the shipbuilding industry

would do no more than require the government to assume the full operating and capital costs of an otherwise stagnant industry. For these reasons we do not believe that utility theory is currently relevant to the shipbuilding industry.

## NATIONALIZATION

Nationalization, then, appears to be the only feasible alternative to the private ownership of the U.S. shipbuilding industry. However, nationalizing the industry will not, by itself, address the central problem underlying the need for this analysis: cost control. Although it may remove some of the excessive costs that allegedly result from the private ownership of the industry, these savings will not be lasting if they are not institutionalized within the new management system.

However, delineating the management decisions that would be required by nationalization provides useful insights into the problem of cost control within the shipbuilding industry. The sole assumption made in the brief analysis that follows is that the motive for nationalization is economic rationalization and that there would be no political impediments to this process. If economic rationalization is not desired, nationalization provides only costs and no benefits. For economic benefits to flow, three major steps would have to be taken by the government:

- A decision on industry capacity would have to be made based on an estimate of the long-term demand for U.S. built ships.
- Financial devices for maintaining this capacity would have to be developed.
- Most important of all, measures for evaluating the comparative efficiency of different shipyards would have to be developed in order to avoid the alleged inefficiencies that nationalization is ostensibly

designed to cure. In our opinion, the design, cost estimating, and industrial engineering function would have to be more thoroughly linked together than they are currently. More will be said of this later.

More specifically, nationalization would require informed judgments on the following factors:

- The number and location of shipyards to be closed down.
- The workload of those yards to be retained on an active list.
- The product, or the degree of specialization required of those yards on the active list.
- The minimum and maximum level of construction that should or could be allocated to a shipyard based on an analysis of such factors as its overhead costs, labor force availability, labor force productivity and continuity, and desired surge capacity.
- For each ship to be built, a firm estimate of the variable costs of construction, i.e., direct material and direct labor. Further, a refined system for tracking actual performance to predicted performance will also be required. This is especially vital in a nationalized industry not otherwise responsive to private sector profit and loss concerns.

In sum, if the industry were nationalized, the government would have to be prepared to accept the full cost of maintaining the industry's capabilities, something it does not do now. This is in addition to the costs that will be incurred in buying out those yards that are to be included in the nationalized segment of the industry.

Further, the government will most likely be required to manage the industry. Here its experience with Naval Shipyards may or may

not be relevant. It should be expected, however, that there would be an interim period after a takeover action in which there would be no changes in the yard's management.

Returning to the cost issue, however, it becomes obvious that <u>two types of on-going costs will be incurred:</u>

1. Those costs that result from the need to maintain industry capacity, i.e., the cost of acquiring and maintaining new plant and equipment; the overhead costs related to the maintenance of a properly sized management, professional and administrative staff; the continuing costs involved in maintaining the <u>least size labor force</u> commensurate with maintaining both the ability to construct a ship and provide a <u>cadre</u> should there be a surge requirement.

2. The direct costs involved in the actual construction of a ship.

In nationalization, then, the government would have to be prepared to pay all of the costs required to maintain the industry at whatever level of capacity was desired. Unlike the current situation, it would not be able to share the resulting business risk with the private sector. Nor for political reasons is it likely to be able to close facilities that may become redundant at some time in the future. Given the current excess of capacity in the industry, this poses a severe economic problem vis a vis nationalization.

However, nationalizing the industry <u>could</u> reduce the cost of ship construction if the following conditions were to obtain:

1. The government were able to close down otherwise redundant facilities for which it now feels "morally" responsible.

2. If the overhead costs of these yards remaining in business could be held to a level consistent with an efficiently planned and scheduled five or ten year ship purchase plan.

3. If tight controls on the variable costs of constructing a ship could be implemented and maintained.

This last point, is perhaps the most critical of all. Current evidence on the industry would suggest that this is where the present ownership has failed.

Although it is not our intention to assess blame for this failure, one point seems evident. The private shipyard has little incentive to strive for efficiency given the current market for new construction <u>and</u> the contracting procedures mandated by the Department of Defense. Clarification is obviously needed here!

The first goal of the private sector is corporate perpetuity. Given the vagaries of the demand for new ships, the private yard is best served by lengthening construction times and maximizing costs where (1) there is no substantial penalty for not meeting delivery schedules or cost estimates and (2) there are virtually no alternative uses for the yard's capacity. Change orders and other elements of the so-called "engagement process" which produce controversies that allow for the creation of claims are, we would allege, very often in the best long-term interests of the shipyards. When settled, these claims contain reimbursements for both direct (production) and overhead (capability) costs. The overhead costs can, in this instance, be related directly to the need for perpetuity. Nationalization would solve this issue automatically. Nationalization would not, however, address the then more salient point of tightly controlling the direct costs of constructing a ship. Our last point above is designed to deal directly and forthrightly with this problem. For the nationalized yard, then, evaluative measures for properly controlling the costs of constructing a ship will have to be developed and implemented.

With corporate perpetuity guaranteed, we would maintain that the strictest controls should be implemented at the direct cost (throughput) level and coupled to incentives designed to stimulate efficient performance. Since fully 50 percent of the costs of constructing a ship, for example, involve purchased materials, the potential for savings here has to be significant. Significant savings in a properly incentivized contract could no doubt be gained in the equally important direct labor area. Any new financial system developed for use in a nationalized yard needs to take adequate notice of these possibilities by providing for incentive payments for cost effective performance.

However, these selfsame incentives could be provided to existing private yards. Cost effectiveness and nationalization are not linked in any logical way. This is to say that the "two-tier" payment system noted above could be equally well applied to the private sector in order to provide it with a significant spur towards efficiency. In other words, the central problem of the least cost construction of naval vessels is not an ownership problem. It is a managerial and economic problem that needs its own solution. Change of ownership or management guarantees nothing in the absence of a program that provides rewards for efficient performance. We would allege that these rewards are not now made available to the privately owned shipyard.

## COST CONTROL

The central and still unresolved issue then, is the need to create an environment that provides the private sector with the incentives it needs to search out more cost-effective ways of constructing naval ships. In our opinion, neither nationalizing the industry nor creating a shipbuilding utility is an adequate or appropriate response to the underlying problem. Nor, as will be discussed later, is contract form which, even less than the nationalization or utility approach, fails to address the

underlying economic condition of the industry. Until such time as the Navy is allowed to come to grips with the economics of an industry characterized by unpredictable demand and bilateral monopoly, no substantive solutions to the problem of cost overruns and claims is apt to be found.

Based on our analysis, we now believe that the beginnings of a long-term and viable solution to the economics of the industry can be found in the appropriate implementation of the two-tier payment system alluded to earlier.

In other words, we would suggest that the Navy develop a situation in which the shipyards are paid separately for (1) the standby capacity that they are being asked to provide (as part of the defense industrial base), and (2) for the variable costs incurred in the construction of a ship. By doing so, we believe that it would be possible to disassociate the industry's need for corporate perpetuity from the construction of a ship and, by so doing, create the environment for developing meaningful incentives for the faster and more efficient construction of naval vessels.

Strong arguments can, of course, be made for maintaining the present system which, like all payment systems, commingles overhead (capability maintaining) and variable (production) costs. First and foremost is the simple fact that this is the way that it is done in the United States! A buyer typically expects to pay a price for a product without regard for any distinction between the production line cost of the product and the associated overhead or supporting costs. However, shipbuilding is unique if only in the final dollar cost of the product that is produced; as much as $1.0 to $2.0 billion per unit of output. Unlike the typical, large-scale, production-oriented firm used in conventional economic analysis, the shipbuilding firm more often than not "bets its entire business" on the construction of only one or two units. There are no long production runs over which it can spread costs, and very little opportunity to gain from the so-called learning curve. If the shipyard fails to produce efficiently on extremely limited output, it risks bankruptcy. No other industry in the United

States appears to be exposed to that great a business risk. This fact alone may justify the need for a special approach to the economics of the industry.

However, additional justification for the development of a special payment system for the industry can also be found in the fact that it is the only component of the defense industrial base that does not enjoy either a technological or price advantage vis a vis its foreign competitors. Foreign military sales are out of the question for the shipbuilding industry. Given the nature of the shipbuilding process, it is virtually impossible for the industry to develop any technological advantage that would commend it to foreign customers. The same, obviously, cannot be said of the weapons suites, communications gear, and other military and maritime devices which convert the ship to a "platform." Here the U.S. generally has either a significant technological or price advantage. Thus, on at least two economic "counts," the shipbuilding industry is unique.

We believe that these two factors are sufficient to justify the apparently special financial treatment being suggested for the industry in this report. However, we believe that the following is also of note:

1. Given the current condition of the Navy's own yards, the specialized capabilities of the industry are essential to the well-being of the Navy. Because of this, maintaining the economic viability of the industry may be classified as being within the national interest. If this is the case, it makes economic sense to detach the costs of corporate perpetuity from the cost of constructing a specific ship or set of ships <u>provided that</u> the disaggregating process allows for a tighter, more astute control of the variable and fixed costs needed to construct a ship. If a yard's capacity or specialized capability is not needed now or in the foreseeable future, it should be allowed to go out of business.

Conversely, if a yard's capabilities are needed, then active recognition should be made of this fact and sufficient payments made to guarantee its efficient long-term availability to the Navy. The current system, it would appear, has evolved into a game of economic roulette inconsistent with our long-term defense needs.

2. Once the issue of perpetuity has been resolved, the relevant cost decision for the Navy then becomes the <u>direct</u> costs to be incurred in the construction of a specific vessel. Currently the prices charged the Navy include not only the variable construction costs of the vessel but also a first approximation of the monies needed to keep the shipyard in business (overhead and profit factors). In a period characterized by a growing specialization between yards, i.e., when erstwhile competitive forces have been minimized by virtue of product specialization, we would maintain that these other costs are irrelevant to the decision making process.[6] The cost of keeping a yard in business will be paid by the Navy one way or the other, short of an action either forcing or allowing a firm to drop out of the industry. Why not recognize this cost for what it is and then concentrate in the contracting process on the actual costs of constructing a ship and the risk characteristics and other uncertainties inherent in properly estimating and controlling these very specific costs? Although fixed price contracts or fixed price incentive contracts may be seen as shifting the risk of corporate perpetuity back onto the shipyard, the recent claims situation would suggest strongly that the legal device of a fixed price contract is inadequate to the task. Because of the substantial element of concurrency involved in the construction of complex combatants, change orders are essential. Despite the legal form of the fixed price

contract, change orders serve to create a *de facto* cost plus contracting environment. One way or the other, the Navy ends up by losing control over costs and paying whatever the actual direct and indirect costs of the yard may be. It is good business strategy for a shipyard with a thin order book to play the change order game, and especially so since change orders carry their fair share of overhead costs. Once again, this statement is not meant to impugn the integrity of the shipbuilding industry. Rather the remark is intended to point out the inevitable tension that must exist between a seller and a buyer in an environment justly described as that of a bilateral monopoly. The Navy's interests and those of the shipbuilders are not wholly congruent.

There are, of course, a number of rejoinders to the above agrument. The first is that the proposed payment system represents a *de facto* "nationalization" of the industry. In fact, it does not. First and foremost, the Navy avoids the acquisition costs called for by the nationalization of the shipbuilding industry. We would estimate these costs at approximately $3.0 billion. Second, the private shipyard would still be at risk for their direct manufacturing costs under the proposed system and, because of its visibility, could be held stringently responsible for these if only as a quid pro quo for the development of a payment system which minimizes the business risk to which the industry is exposed.

The key unresolved issue would then be the mechanism for determining the validity of the yard's direct cost bids. Changes in procedure and some up-front funding may be called for here. It would seem imperative that the design, cost estimating, and industrial engineering process be merged as early on as possible. Ideally, a yard should be required to design the ships that it builds, and during this process refine its costs estimates. This would then require an "outside" verification of the cost estimate, a task well within the proven capabilities of the Naval Sea Systems

Command.

If the Navy or an outside agent designed the ship, they could be required to provide the cost benchmarks needed to validate the direct cost estimate to be provided by the shipyard. In this instance, the yard should participate in the process in order to make certain that the ship's design is basically compatible with the yard's technical capabilities.

To summarize, then, the thrust of our argument is the need to create an environment in which the need for "engagement process" can be focused only on those costs that are likely to yield savings; direct material and direct labor. By providing an incentive for efficiency that will not impact negatively on the shipyard's ultimate need for corporate perpetuity, it should be possible over time to move towards a cost-effective shipbuilding base. In essence, we are suggesting that a shipyard's future should not be tied to the construction of a limited number of ships over a relatively short time horizon.

Either we need a shipbuilding industry or we do not. If it is not needed, it should be allowed to go out of business. If it is needed, then overt financial and political recognition of this need should be made in order to allow the Navy to focus on its more critical military mission.

## CHAPTER III: GENERAL DISCUSSION

Underlying the arguments for the maintenance of a privately owned U.S. shipbuilding industry and the development of a more effective format for meeting the joint financial needs of the Navy and of the industry are a number of key assumptions that need clarification:

1. First and foremost is our belief that a shipbuilding base is an essential component of our defense industrial base. From a purely economic perspective, there is little justification for maintaining a commercially-oriented shipbuilding industry. Merchant vessels can be purchased abroad at lower costs than now obtained in the United States. As the shipbuilding industry in general migrates to the less developed nations, the cost disadvantage to the United States can be expected to increase. In this environment, the sole justification for a domestic shipbuilding industry is its ability (a) to produce combatants as needed and (b) construct non-combatants in the event of an emergency (standby capability).

2. The need for this standby capability has been made more urgent these past few years by the competitive disruptions suffered on the European shipbuilding base. (See Appendix D.) In the event of a military emergency, our European allies may be able to provide us with only the most limited of ship construction and repair resources. As with World War II, we may be forced to "go it alone." The critical difference between then and now is that we began to mobilize in 1937 for WW II. In the absence of a similar mobilization plan, it seems obvious that our existing defense industrial base should be maintained in the best condition possible. Attrition

rates will be significant, even in a short war. Allowing the existing shipbuilding base to erode does not appear to be in the national interest.

This line of reasoning leads to the conclusion that if a shipbuilding base is, in fact, essential to our national interests that overt recognition be given to the costs needed to maintain that base. Obscuring the cost by "commingling" it with ship construction costs appears to be improper and potentially misleading. By isolating out and identifying the costs of maintaining a capability, it should be possible to measure in reasonable terms the benefits that flow from these costs. More importantly, by accepting these costs as given, it should be possible to devote more adequate attention to controlling the costs of the actual output of the various shipyards that comprise the base. The engagement process per se could then be directed more to the potential for cost savings as opposed to the adversary relationship that it has currently assumed.

This argument is predicated more on the need to maintain a viable defense industrial base than on the need to maintain a shipbuilding industry as such. This point cannot be stressed too much.

## CHAPTER IV: THIN CAPITAL AND THE DEFENSE INDUSTRIAL BASE

In our opinion, one of the more critical realities of the U.S. defense industry is its relatively poor financial condition. Most observers have been led to believe that those firms whose business is primarily defense are financially strong and powerful corporations. For better or for worse, the opposite tends to be true. For the most part defense-oriented firms are thinly capitalized <u>if</u> the strength of their capital base is measured by the relationship of net worth to sales. The Fortune 500, for example, shows an average relationship of approximately 2.5:1; that is, $1.00 in owners' capital is required to support $2.50 in sales. Prior to the inflationary surge in 1972/1973, the relationship was more akin to 2.0:1.

The defense industry to the contrary shows significantly higher ratios. For 1976, the ratio for a selected number of defense companies was as follows: (dollars in 000,000)

| Company | Sales | Net Worth | Ratio |
|---|---|---|---|
| General Dynamics | $2544 | $644 | 4.0 |
| United Technologies | 5166 | 1245 | 4.1 |
| Lockheed | 3203 | 167 | 19.2 |
| Boeing | 3917 | 1085 | 3.6 |
| Raytheon | 2463 | 536 | 4.6 |
| Grumman | 1502 | 171 | 8.8 |
| Todd | 213 | 11 | 19.4 |
| McDonnell-Douglas | 3544 | 945 | 3.7 |

For 1976, the ratios for a selected number of non-defense companies with comparable sales were as follows:

| Company | Sales | Net Worth | Ratio |
|---|---|---|---|
| American Home Products | $2471 | $991 | 2.5 |
| Emerson Electric | 1505 | 689 | 2.2 |
| Celanese Corp. | 2123 | 796 | 2.7 |
| Westinghouse | 6145 | 2138 | 2.8 |
| Firestone Tire | 3939 | 1560 | 2.5 |
| National Gypsum | 613 | 337 | 1.8 |
| Motorola | 1494 | 686 | 2.2 |
| Timken | 884 | 536 | 1.6 |

Although a comparison such as this is far from conclusive, it still points to a critical, but otherwise ignored, trend within the defense industry. This is that the typical defense firm is a high-risk firm financially; that the industry for the most part does not have the capital funds needed to fully sustain the business and financial risks to which it is exposed.

Based upon our review, the roots of this problem are two-fold:

1. The vagaries of the market for defense goods. As suggested earlier, defense-oriented firms do not have a substantial degree of control over the market in which they operate. In many ways, defense marketing represents a somewhat disconcerting attempt to recognize "markets of opportunity."

2. Conscious national policy, especially during the 1960's to limit profits in defense work in order to avoid a build-up in the industrial and economic strength of the so-called "military industrial" complex.

Because of this, the defense industry faces two major risks which, for our purposes, we have defined as business risk and financial risk.

- Business risk is defined as those risks flowing from a lack of market control.
- Financial risk is defined as those risks flowing from thin capitalization.

Defense contracting procedures have, of course, adapted themselves to both perpetuate and mitigate these risks. The risks have been perpetuated by the annual funding process and the low profits allowed on defense work. We would allege, by the way, that these are congressional responses to institutionalized fears of a strong "military industrial complex." The validity, or lack of validity, of such a concern is a political issue well beyond the scope of this paper. The existence of this concern, however, has been verified by a number of students and indeed key participants in the defense policy making process.[7]

Nonetheless, it is obvious that we do need to sustain a defense-oriented industrial capability. The accepted technique for accomplishing this is through the medium of the contract. In our opinion, the reasonably generalized use of cost-plus contracts is tacit recognition of the need to protect this industrial base. By providing for fluctuating overhead reimbursement rates, the cost-plus contract provides substantial protection on the downside against the two risks to which the defense firm is heavily exposed. More importantly, the generalized use of cost-plus contracts serves to stabilize the business operations of the defense firm by guaranteeing it some form of corporate perpetuity, albeit at profit rates low enough to discourage its sound industrial growth. Thus, a substantial, but potentially unrecognized portion of the funds flowing from a cost-plus contract is, by necessity, devoted to maintaining capability against the potential need for a more efficient utilization of these facilities during a national emergency.

The fixed-price or fixed-price-incentive contract does not, by itself, provide the defense firm with the same type of protection against downside risk. Indeed, the fixed-price contract may

aggravate the risks where there are gaps in product definition and design. In fact, except where a fixed-price contract is used to acquire a product with a known design, known production technology, and high levels of output, its existence will most likely destabilize the market. Here, destabilization is being defined as providing inadequate or potentially inadequate funds to maintain a desired production, construction, or technological capability. We would allege that in a fixed-price contract the funds should be used solely to buy output. Thus, we believe that it can be shown that the extended use of fixed-price contracts in a production/construction area characterized by many unknowns can destabilize the market to the point of driving specific firms out of the industry. We are not inferring here that this has been done but are only suggesting that it could be done. This is because the fixed-price contract, unlike the cost-plus contract, makes no explicit recognition of the need to insure capability. For these reasons we believe that fixed-price contracts for combatants are inappropriate. However, we understand the Navy's perspective here and are not now prepared to argue this point further. The fact remains, however, that change orders convert fixed-price contracts to cost-plus contracts if their more critical effect is to prolong the time to completion of a ship. By extending the date to completion, the Navy provides the shipyard with the funds it needs to guarantee its perpetuity. As suggested earlier, this is the "hidden cost" of free enterprise which the defense effort would not otherwise have to pay if the shipbuilding industry were both rationalized and nationalized. Placing a dollar value on this hidden cost is possible, and can be accomplished if the need arises. The GAO, for example, has made estimates of this type for the U.S. airframe industry.[8]

The use of cost-plus contracts is often justified by the fact that the defense industry is thinly capitalized. The argument, however, is rarely ever stated in these terms. Rather, the reality is recognized through the medium of progress payments, which,

along with the cost-plus contract provide some form of protection against downside risks. The quid pro quo for these contractual considerations then becomes a lower profit on sales than is otherwise typical of American industry. In this environment, corporate perpetuity per se is seen as a significant return to invested capital. This gives rise to a major anomaly within the structure of American industry; a group of firms who are essential to the national interest but who, because of the nature of the industry in which they compete, are not only thinly capitalized but kept so by the profit policies of the U.S. government. It is the rare defense-oriented firm that can break out of the circularity of thin capital and low profits.

Analytically, the puzzle shows up in the statistics that reveal low returns on sales (1-2%) and high returns on invested capital (30-70%). The high ROE appears to suggest a healthy company profit-wise when, in fact, the opposite is more likely true. The potential tragedy is that the casual observer misinterprets the true meaning of the ROE statistic. The fact is that defense contracting is a poor-paying, high-risk entreprenuerial game that does not fit into the "scientific management" mode of American economic thought. In the case of the defense industry, we believe that financial strength is more accurately measured by return on sales.

The defense industry, of course, responds to this economic environment by remaining essentially labor-intensive since this policy allows for lower breakeven levels of operation. There is a price to be paid for this, however, since the marginal profitability of the labor intensive firm is less than that of the capital intensive firm! Labor intensity is no more than another device for providing protection against a downside risk. Since the geometry of marginal profits above breakeven point is equal to that of marginal losses below breakeven point, the circularity of thin capital and low profits is, further, reinforced by the additional reality of labor-intensity. Barring some rather dramatic product or technological breakthrough the normal defense-oriented firm thus becomes trapped into a thin capital/thin profit situation.

Their weak capital base is then used by some as a justification for the "engagement" process which is subject to so much criticism. However, in light of the need to provide progress payments and other financial support--a need generated by the thinly capitalized nature of the firm--the engagement process is justified. In the starkest of terms, the government is the defense contractors' partner in fact if not in law in that the government must stand ready to absorb at least some of the contractor's losses and provide him with the working capital he needs when sufficient differences exist between target price and target cost. It is for these reasons that the engagement process has led to an adversary relationship between the DOD official and industry. Few businessmen like to be reminded of their dependency on one customer not only for the bulk of their business but also for access to the funding not otherwise available to them from the capital markets because of the circularity of thin capital and low profits. Except for the most patient of business executives, the situation is fraught with conflict.

## CHAPTER V: THE DEFENSE INDUSTRIAL BASE AND THE TWO-TIERED PAYMENT SYSTEM

### CONTRACT FORM

In the environment just described, the contract can be seen more as a political than an economic or financial document. It is reasonably obvious that many of the defense industry's financial problems could be solved simply by allowing the industry to earn larger profits on defense business. As its capital base was supplemented by increases in retained earnings, the industry would be better able to deal with many of the risks inherent in government contracting.

This, however, would pose a political risk to the government in that enhanced profitability would allow, if not in fact encourage, the typical defense contractor to slowly diversify out of the defense industry. Thus, in the absence of a firm, long-term and predictable demand for defense goods and services, it seems reasonably obvious that enhanced profits might encourage the eventual migration out of the industry of a substantial number of companies considered vital to our national interest.

The policy risk at the national level then becomes almost irreconcilable. There is no question as to the need for a defense industrial base. Conventional American economic theory would suggest that a wholly self-financing defense industrial base would be ideal. High profits would help create this entity. But high profits might also stimulate exit from the industry through the medium of diversification. Therefore, the industry has to be kept lean and hungry, and in a somewhat tenuous condition. In a sense, there appears to be no logical place for a defense industry in a peacetime, otherwise liassez-faire oriented economy. The circle then closes with the low profit margins allowed on defense sales. This, in turn, creates a less than stable industry which, in turn, requires the engagement process needed by the government to protect itself against the risks which it has engendered by doing business

with less than adequately financed firms. This circularity is further reinforced by the need for an extremely knowledgeable customer, i.e., one capable of specifying many of the attributes of the product or service to be produced. Along with the financial issues noted above, this creates an industrial group unique unto itself.

The more common solution to the problem is now sought in the contract form. Here a legal mechanism takes over the function more normally filled by financial devices. Contract forms proliferate based on a parochial assessment of technological risks. The more critical factors of business risk and financial risk as defined earlier are made subordinate to technical and legal issues. We would allege that this does not allow for adequate recognition of the need to maintain an industrial capacity whose value in peacetime may be minimal but whose value is immeasurable in time of military conflict.

It would seem to us that the policy making process at the national level should more <u>overtly</u> recognize the need for this capability and its <u>associated</u> costs. Based upon our work to date it seems reasonably evident that we need a policy and an administrative procedure both of which are capable of distinguishing between the need to buy actual or latent capability and a product or service, <u>per se</u>. Were it possible to distinguish between these two economic entities, the military decision makers could concentrate the engagement process on the product cost decision where it rightfully belongs. The central concern of the military should be with buying the best military product at the least possible cost. This is a technological problem well within their abilities and their character. Managing a defense firm is not! Given the current contracting and economic environment, however, the military managers are now being required to engage in full or in part in both activities oftentimes with disastrous results for the military and for the industry. The two-tiered payment system suggested earlier in this report is a way out of this dilemma. The proposed system is technically feasible, and could be

implemented over time provided only that there is policy level support for such an activity. The technical development of the two-tiered payment system is discussed in a later section of this report.

Given the above, we now believe that cost-plus contracts are the correct vehicle for acquiring naval ships but only if there is a defined need to retain a privately owned shipbuilding industry. Properly administered cost-plus contracts, if tied to the suggested two-tiered payment system, could help to constrain the steady and somewhat inordinate increases in the cost of combatants. Conversely, invoking a two-tiered system would also allow for a greater reliance on risk shifting fixed-price contracts and especially so if the design, cost-estimating, and industrial engineering processes were linked together early enough in the contracting and construction cycle to properly identify the cost risks associated with a specific project or program.

## PROCEDURAL ISSUES

For the two-tiered payment system to be implemented, a number of steps would have to be taken to implement the program. They are as follows:

1. <u>Cost Codification</u>: Costs would have to be codified so that standard accounting classifications could be developed. The purpose behind this effort, however, is not to develop a new financial or managerial accounting process but rather to define the industrial dynamics of the shipyard so that costs can be properly attributed to either capability or throughput factors. Concomitant decisions could then be made about the total capability to be sustained within an industry based either on the criterion of cost or strategic necessity. The data flowing from this analysis would have to be reconciled at the highest policy levels.

2. Standard Accounting System: This would flow naturally from the cost codification process noted above. The central if not sole purpose of a standard chart of accounts would be to insure comparability between firms. We hold no brief for standard accounting systems except as they validly contribute to an evaluative process and would not otherwise counsel their use.

3. Industrial Engineering Studies: These are needed to determine the least-size work force that can be utilized to construct a ship within an acceptable period of time and at an acceptable cost. The rationale behind this analysis is to flush out the cadre concept of industrial base maintenance discussed earlier in this report and provide some initial basis for determining the indirect and overhead costs needed to support this sized labor force. A full analysis will require that two or three throughput scenarios be screened during this phase of the proposed project.

4. Determination of Overhead Factors: These, as noted above, relate primarily to the maintenance of a properly sized managerial, professional and administrative staff and follows from step (3) above.

5. Procedures For Estimating The Direct Cost of Constructing a Ship: Here the focus should be on the direct labor and direct material costs required to construct a ship. Retrospective reviews can now be made of prior construction programs but the central thrust of the projected effort here should be to define effective ways of linking the design, cost estimating, and industrial engineering process as the basis for providing valid and controllable cost estimates for a specific ship or series of ships. This ability exists and is finely honed in at

least one American shipyard. Its development should be more broadly encouraged through the industry. Where appropriate, funding should be provided for all participating shipyards in order to make certain that they have the capability of properly merging these skills since, in time of conflict, this skill would be vital to our surge effort.

Pragmatically, it should be possible to implement a program such as this within the industry over the next one to five years. Conventional wisdom would now suggest the need for a pilot project at a relatively small shipyard as a way of testing out and refining the analytical skills needed to extend the program to the entire industry. At the same time, it would make sense to fund a larger yard to direct itself through the selfsame process since the process itself is, in fact, analogous to the corporate planning procedure. This being the case, there are no staff personnel available in each of the yards capable of implementing the suggested two-tier system. Although the yard's existing data base may not now be a direct fit with our needs, it would provide useful departure points for the work detailed in steps (1) through (5).

It should be noted that the analysis suggested above will also provide data for policy-level decisions that will rely upon but are, in fact, apart from the five step process outlined above. In no way should the technical process suggested above be allowed to preempt the policy making process.

# CHAPTER VI: THE SPECIAL CASE OF NEWPORT NEWS AND ELECTRIC BOAT

Some of the special problems presented by the Newport News and Electric Boat shipbuilding companies are discussed in our 13 September 1978 letter to Admiral Thompson (Appendix E). Because of their size and nuclear capability, these two yards pose a unique problem. None the less, the cost format suggested in this report is applicable to these two firms. Newport News would require a somewhat different analytic process because of its commercial business. Electric Boat would not inasmuch as it is devoted solely to Navy construction.

For each of these two yards both the public utility and nationalization alternative set forth in this report is applicable. However, as discussed in the various appendices, neither creating a shipbuilding utility nor nationalizing the industry appears to be cost-effective. A more appropriate alternative might well be to provide an existing Navy yard with the nuclear capability now in existence at Newport News and Electric Boat.

This approach, however, appears to be wasteful except as it is impossible to assert effective price controls within these two yards. The more cost-effective approach, then, would be to amend or otherwise modify the contractual arrangements with these two firms by <u>providing them with the incentives that they need for gaining and maintaining shipbuilding efficiency.</u>

In this regard, we believe that some previous reports on the shipbuilding industry have gone far afield in their concern with contract forms. Contract form is not the underlying issue for the industry. They will accommodate to whatever legal instrument is used. The more central issue is the dual one of perpetuity and profits. That has been a central theme throughout this report. For whatever the cause, the industry's profits have been inadequate to stimulate the creation of an efficient, well-managed industry. Further, given the false signals generated by Marad '70, the industry is understandably nervous and critical of any action which

seems to threaten the status quo. In this environment, slow and prolonged construction cycles, irrespective of the conflict in which they are bound, are "good" corporate policy whereas conventional forms of industrial efficiency are dysfunctional. In this type of economic climate, perpetuity per se is regarded as an adequate albeit unsatisfactory return to capital. Unless the market conditions surrounding the industry are improved, there is little likelihood for a change in the conflict-charged atmosphere that characterizes the Navy-shipbuilding industry relationship.

Parenthetically, these same reports have paid lip service to the problems involved in marrying high technology command, control, communication, habitability and weapon systems to the less complex technology of ship construction. As discussed in our letter to Admiral Thompson, it is entirely possible that a completely new industrial structure is needed to produce the complex combatants that are now required by our Navy.

If this is so, the Navy might well give thought to assisting in their non-competitive development in conjunction with existing shipbuilding resources. Creating competitors is the last thing that the industry now needs. Given their massive investment in new facilities, they must, of necessity, avoid the issue of alternative structures until such time as they are assured of the fact that they will not be driven out of business as the result of their own research.

Newport News and Electric Boat are illustrative of this. Given their monopoly on nuclear capacity, they cannot be forced out of business just as long as there is a strategic demand for nuclear-powered submarines. The key business threat that these firms have to contemplate is the possibility of the development of a relatively inexpensive, hard to detect, land or seabased device capable of carrying long-range ballistic missiles. One would not expect them to participate in research on alternative platforms unless they were to be involved later in their production. Nobody intentionally puts himself out of business. Perpetuity is still the name of the game. Until Navy contracting procedures more fully

recognize this central problem, there is little potential for creating a cost-effective shipbuilding industry.

## FOOTNOTES

1. For a full discussion see Kaitz, Edward M., The Profitability of the United States Shipbuilding Industry from 1947 to 1976, Office of Naval Research, 1978.

2. The profit problems of the defense industry are treated in a relatively complete manner in Profit 76: A Summary Report prepared by the Office of the Assistant Secretary of Defense (I and L) in 1976.

3. Thin capitalization is a legal term normally used to describe firms whose capital structures are heavily weighted to the use of debt. Our use of the term is more general and is used to describe firms where the sales/net worth ratio is extremely high when these firms are compared to others with similar sales volumes. In either event, thin capital is used to describe a financially risky firm.

4. In the mid 1970's, in response to the temporary stimulus provided by Marad '70, certain firms with a primary orientation toward ship repair business successfully bid on new construction despite minimal investments in plant and equipment. These firms were uniformly profitable despite their imputed lack of facilities and funds.

5. Since 1970, the industry has invested approximately $1.6 billion in new facilities. For further details see Kaitz, Edward M., op. cit.

6. The relevant concern here is the potential for a dimunition in competition within the industry resulting apparently from a McNamara era decision to promote concentration in the industry through specialization, e.g., the nuclear capacity of Newport News and Electric Boat. The Navy could at sometime in the future be "held hostage" by this capability in the absence of any program designed to jointly protect the Navy's and the contractor's position. No effort to date appears to have been spent in defining this joint position despite the strategic position occupied in the Triad by nuclear submarines. In our opinion, strategic doctrine needs to contemplate both military and industrial strength.

7. See, for example, Yarmolinsky, Adam, The American Military Establishment, Harper & Row, New York, 1971, especially pages 66 and 67.

8. Aircraft Industry Capacity Study. Joint Department of Defense/Office of Management and Budget Report, January, 1977.

PART TWO

## APPENDIX A: AN OVERVIEW OF NATIONALIZATION

### INTRODUCTION

Concerns about the economic stability of the United States shipbuilding industry have stimulated proposals for changing the structure of the industry, including a shifting of risk from the private sector to the public sector. One suggested mode of ownership is nationalization. Traditionally, the nationalization of an industry has been undertaken as a means of implementing a socialist planning structure; of building and developing a responsible and profitable public service; of influencing resource distribution and allocation by intervening into the economic structure of an industry; and of minimizing external costs, such as the environmental effects of an industry. For example, the nationalization of the railroad industry conceivably could reduce duplicate routes which in turn would reduce dirt and noise levels.[1] However, in Western Europe, nationalization in recent years has been used increasingly as a tool of macroeconomic policy, both for influencing the level of employment and as a tool for bailing out industries which have lost their capability to function profitably.[2] With the increasing internationalization of all economies, national economies are being forced, for example, to cope with chronic balance-of-payments deficits, increasing competition by developing countries, and the growth of multinational corporations. With respect to the shipbuilding industry, national industries are coping with structural changes in the form of chronic competition from the developing countries, as well as decreased demand which has been exacerbated by fluctuating exchange rates.

An evaluation of the potential effects of nationalizing the United States shipbuilding industry may be undertaken in part by examining the circumstances surrounding the process of nationalization in Western Europe and in particular Great Britain. At the present time, information is more readily available

concerning nationalization in Great Britain than in other countries. Since the shipbuilding industry in Great Britain was nationalized only on July 1, 1977 (and only in Great Britain is the shipbuilding industry fully nationalized),[3] it is not yet possible to fully assess the influence of nationalization on this particular industry. However, it is important to examine the nationalization process in its historical context with an emphasis on its characteristics and trends.

The primary characteristics of the nationalization process in Western European countries are several:

- Increasing politicization of the nationalized industries with attendant effects on economic efficiency and marginal performance.
- Reluctance to relieve overmanning and redundancy.
- Difficulties in formulating standards for measuring performance and efficiency and in developing financial targets and economic criteria.
- Attempts at partial or complete denationalization.
- Attempts at economic rationalization.
- Developing the role of workers vis-a-vis management.
- Relatively poor profit performances.

## POLITICIZATION

The nationalization process in effect changes the ownership of an industry from private to public. In Great Britain, a nationalized industry is a public corporation with publicly owned assets and directed by a Board, whose members are appointed by the Secretary of State but who are not considered civil servants. The Board is free, at least in the legal sense, to handle its own affairs with no intervention from Parliament.[4]

A key development in the nationalization process in Western Europe is increasing political interference in the affairs of the nationalized industry. For example, in Great Britain, the "arms-length" approach to government intervention in nationalized

industries was promulgated by Herbert Morrison, who formulated the nationalization process in pre- and post-World War II Great Britain. Under this approach, nationalized industries were overseen by a government Minister, who was regarded as a guardian of the public interest, but were managed by non-civil servants. During the years following World War II, several industries were nationalized, including the coal, public transport, electricity, gas, railways, road haulage, and the steel industries. The general feeling among the proponents of nationalization was that there would only rarely be a conflict between the government and the nationalized industry.[5] However, over time ministerial sponsorship became a means for the inclusion of nationalized industries into the government's toolbag of policies for influencing the health of the national economy. In the mid-1950's, nationalized industries no longer were allowed to finance their business externally through the bond market. Prior to 1956, 60 percent of capital needs were provided for in this manner. Instead, funds were given to industry by the government.[6] The White Paper of 1961 and that of 1967 further delineated financial and economic targets and will be discussed in more detail in another section of this paper.

Increased politicization of late has resulted in increased intervention. The Aircraft and Shipbuilding Industries Bill requires that these industries increasingly consult with government. British Aerospace and British Shipbuilders "will be required to formulate their corporate plans and conduct their operations within lines settled from time to time with the approval of the Minister and their plans will cover capital investment, research and development, financial forecasts, and other matters specified by the Secretary of State."[7]

The primary impact of politicization has been on managerial professionalism. As a result of political intervention in the decision making process, the role of the manager in making policy decisions, co-ordinating various activities, and creatively carrying through operational plans for accomplishment of overall objectives has been superseded by government. The necessity of

choosing between financial criteria and political criteria has de-emphasized the managerial role. Because decisions and goals in effect are made by the government, less opportunity is available for management to act independently and creatively; rather, government officials are included in the decision making process by giving approval and consultation to industrial managers. Thus, managers in effect are given less opportunity to make contributions to the decision making process, leading to a reduced level of morale.[8] Furthermore, "there is a lack of trust and mutual understanding between those who run the nationalized industries and those in government (politicians and civil servants) who are concerned in their affairs."[9]

In most Western European countries, since 1945 the relationship between government and business was such that government intervention in business was not highly regarded, particularly in Britain and Germany. The exception was France where government has maintained a very compatible and interventionist policy towards business.[10] These negative attitudes were incorporated into the early nationalization programs. Over the years, government intervention increased gradually in response to various situations. As a result of this gradual step-by-step development, the impression easily gained by a review of the nationalization processes is that they have been fragmented, uncoordinated, and dominated by the political process, i.e., changes are made according to short-run situational demands even before effects of prior policies are evaluated and allowed to fully work through the system. This has apparently resulted in organizational inefficiency and confusion.

Recently, several countries have developed schemes which attempt to deal with excessive government interference in nationalized industries. In Sweden, a government holding company has been set up to act as a "buffer between the government-owned firms and what has been an intervention-prone parliament."[11] This holding company is forbidden by law from intervening in the actions of its subsidiaries which are to be managed as if they were private

firms. In France, the government has suggested that nationalized firms be given full managerial freedom to be operated financially but within predetermined guidelines. A contract which delineated the commitments of both the government and private firms was drawn up. The objective was to give a degree of autonomy to management and to establish financial criteria for measuring management's efficiency. However, this plan did not fulfill its promise. As in many other countries, the recent increase in the rate of inflation led to an abandonment of the contract guidelines. With inflation rates on the upswing, governments have put controls on price increases, thus taking away complete managerial freedom.[12]

If the United States shipbuilding industry were to be nationalized, it would be important to establish legal parameters stipulating the relationship of the managers of the nationalized industry to the Navy. Failure to do so may lead to losses in organizational efficiency, i.e., problems of overmanning resulting from indecision over whether to follow political or economic goals. Furthermore, depending on the degree to which the government enters into the decision-making processes of the shipyards, there would be increased administrative costs in addition to acquisition costs.[13]

## OVERMANNING AND REDUNDANCY

Another characteristic of the nationalization process is reluctance to relieve overmanning and redundancy or to close down firms which are no longer profitable. Due to the size of the labor force, many governments have felt responsible for an economically redundant firm. This situation is well exemplified by the current state of shipbuilding both in Great Britain and in other countries of Western Europe. As of Spring, 1978, world orders for new ships were only 1/3 of their 1974 peak. In 1976, the British government spent almost 65 million British pounds to subsidize shipyard construction (60 percent of its capacity). The estimate is that for 1978, that figure will increase to 100 million British pounds.[14] Parliament is considering a bill that would provide a "redundancy payment" for displaced shipyard workers, i.e., a

financial compensation for being laid off. However, union leaders are attempting to have the payments made only if workers voluntarily accept them. Presumably, the unions disagree with the government proposal. Since many shipyards in Great Britain are located in regions of already-high unemployment, a job is of more significance than receiving compensatory payment for being laid off, which in and of itself does not lead to increased job mobility.[15]

Overmanning reflects the politicization of the industry discussed earlier. "Many U.S. yards are located in areas of high unemployment and any cutback of the yards' labor forces would be politically sensitive since the current Labor Party government sought support in its successful election bid with promises of nationalization for the shipyards."[16] Those who supported the Labor Party believed nationalization to be preferable to shipyard closure. However, unless inefficient and unnecessary shipyards are closed down, nationalization will not be beneficial in terms of economic efficiency.

Yet, if unnecessary shipyards are closed down, the government must deal with the political and financial ramifications of laying-off a large number of employees.

Overmanning is also a problem in Sweden. The Swedish government is offering approximately $1.76 billion (or 8 billion Swedish kroner) in aid over a three-year period, with a great portion of the funds being used to insure employment in other industries in areas where the shipyards are located.[17] In early spring of 1978, labor unions in Holland were reported "up in arms" over the possibility that shipyard capacity would be cut by 50 percent and the labor force reduced by 1/4.[18]

Overmanning adds costs to the production of goods and services and offers no gain in productivity rates. Yet, the problem is to some extent a vicious cycle. Failure to reduce overmanning increases costs to an industry making it more vulnerable to supply and demand shocks. In cases where a sudden decrease in demand occurs, a producer would ordinarily cut back on employment.

Failure to do so would leave his wage costs the same during a period when his revenues are decreasing due to decreased demand. The larger the differential between costs and revenues, the more necessary it becomes to find a new source of funds in order to remain in business. One source of funds is a government subsidy. If the government prefers to administer the methods whereby its funds are utilized, the dependence on subsidies can be a first step toward nationalization. Yet, by the same token, if the industry follows economic criteria and lays off a large number of workers, the government becomes responsible for at least their short-term maintainance. For the nationalized industry then, the problem becomes one of choosing between short-term political pressure and long-term economic criteria. In certain situations, such as when anticipated demand for ships is larger than current demand or when a surge cadre is expected to be needed for emergency situations, it may be feasible to subsidize overmanning. Short-run subsidies, however, often have been continued indefinitely and have turned into long-run government deficits. Clearly, in a nationalized industry it becomes important to determine how to coordinate political and economic interests as much as is possible, i.e., should short-term expedients (generally political) be used when they are in conflict with long-term economic goals?[19]

When discussing overmanning, it becomes important to determine the responsibility of the government to the displaced worker. It may be economically feasible and efficient to pay the displaced worker a compensatory payment or set up training programs rather than keep the industry overmanned. For example, during the recession of the mid-1970's, Volkswagenverk of Germany found itself facing a decreasing demand and thus believed that a cutback of 25,000 employees was necessary in order to avoid overmanning. Rather than provide a subsidy to keep these workers on the payroll, the government offered financial aid to retrain these workers and to improve their opportunity for transfer into other industries.[20]

With respect to the U.S. shipbuilding industry, overmanning is a problem and most likely will continue to be so because of a low

mid-term demand for ships. Were the industry to be nationalized, the government would have to assume the responsibility for deciding on the amount of industry capacity necessary to fill current and expected (including surge) demand, as well as the number and location of shipyards, if any, that should be closed down. It would also have to decide how to handle the displaced workers.

## EFFICIENCY STANDARDS

An examination of nationalized industries in other countries underscores the need to establish measures of performance. Failure to adequately define financial and economic goals at the inception of the nationalization programs in Great Britain may have been one cause of a less efficient performance record than might have been expected. Although many industries were nationalized in 1945-49, it was not until 1961 that a White Paper:

> incorporated the first overall view of financial and economic control principles for nationalized industries. It reflected the prevailing view that public corporations should act as commercial entities earning a commercial rate of return at arm's length from government. It was assumed that this would adequately ensure efficient allocation of economic resources. 21

Public corporations were given the obligation to break even: "surpluses on Revenue Account should be at least sufficient to cover deficits on Revenue Account for a 5-year period."[22] Targets for financial returns on investments were not specified, but the government asked that it be notified when anticipated return was comparatively low.

In 1967, another White Paper focused on the need for economic criteria: "prices were to be equated with long-term, marginal costs; a test discount rate was to be used to try to ensure that public investment earned a return which was comparable with that of private industry."[23] Furthermore, social cost/benefit measures were introduced in an effort to determine if social responsibilities were being fulfilled.

Also, in the late 1960's a new form of capital called public dividend capital was set up. This type of capital is not like debentures which are fixed-interest securities. Instead, interest payments were pegged to corporate profits and losses. This form of capital will be made available for the nationalized aerospace and shipbuilding industries.[24]

Establishing financial and economic criteria for nationalized industries is difficult since these firms do not have the typical competitively-oriented market goals of maximizing profits and minimizing losses. The nationalized firm cannot easily exercise control over the sources and uses of its funds, and with constraints on managerial actions affecting the ability to earn profits, investment capital is not always provided by profits. Nationalized firms must, therefore, depend upon the government to either provide them with loans at special rates or to guarantee their public borrowing. The financial risks are thus shifted from the private sector to the public sector. With funds being provided by the government, any losses of the industry are in effect paid for by the tax-paying public. Thus, the financial risk of a nationalized industry is borne by the public whereas in an unnationalized industry, all business risks are borne by the owners and shareholders of the firm.[25] Furthermore, with the tax-paying public bearing the risks, there can often be a loss of services: . . . "if an argument is sustained in favor of spending more money on the nationalized industries this means making even bigger reductions in the crucial welfare services . . ."[26]

## DENATIONALIZATION

In some countries, experiments with partial denationalization are being carried out, although no full explanation of the trend yet exists. British Petroleum, National Bank of Paris and some Norwegian nationalized firms are seeking new equity capital in the private capital markets.

> The mere existence of private shareholders is an important influence in encouraging the government not to intervene in decisions which will effect the firm's efficiency and profitability. Partial denationalization would encourage new sources of growth capital and would work against the proclivity of intense government interference with financial management. 27

However, full denationalization may have its difficulties. It is conceivable that were an industry denationalized, many potential investors would be reluctant to purchase shares of equity capital for fear of renationalization by the government.

In Great Britain, the National Enterprise Board was established as a government holding company in 1975. The NEB holds shares both in companies which are owned completely by the government and those which are owned jointly by the government and private sector. The government does not grant aid directly to a financially unhealthy firm but gives financial assistance through the National Enterprise Board which, in turn, acquires shares in the firm. The National Enterprise Board in the short-run is designed to invest in "potentially profitable" firms only and thus in the long-run is expected to earn profits which the Board can then invest in economically depressed regions of the country. When acquiring shares in a firm which it aids financially, the NEB acquires a controlling interest and is, therefore, expected to play a dynamic part in leading firms to modernize and otherwise become more efficient.[28]

Managing a nationalized industry by the rules of private competition is not easy especially where social goals conflict with economic goals. Firms which are nationalized are caught between serving competitively-oriented management goals and social/ political goals and may not necessarily be adequately judged by the typical profit and loss measures.[29] In any event, suitable measures of managerial performance and shipyard efficiency must not only be defined but also formulated. This task obviously is not an easy one, but must be considered an essential part of any plans for the nationalization of the U.S. shipubilding industry if the

shipbuilding industry is not to be run strictly by financial goals. In Sweden, for example, the holding company which serves as an intermediary between parliament and the managers of the nationalized firms "has taken the position that the firms should not be asked to shoulder any additional social goals than a private industry must undertake, unless there is special compensation for the value of the social service being provided."[30] Such a procedure would put into public debate the benefits and costs of having firms undertake social goals.

## RATIONALIZATION

Rationalization involves three processes: standardization, specialization, and interoperability. Standardization occurs when cooperation between firms is undertaken in research and development, the use of common equipment, and in the development of reasonably similar administrative procedures. Specialization is, however, a market-oriented practice and occurs when product differentiation monopolies are granted specific firms. Interoperability occurs when decisions are made at the design and engineering level to produce common or otherwise interoperable equipment or products.

The nationalized shipbuilding industries of Sweden and Great Britain exemplify an informal type of rationalization. The extent of co-ordination among the Swedish shipyards enabled them to be ranked second in output among the shipbuilding countries of the world during 1970-1975. However, with the drastic decrease in new ship orders since 1974, Sweden's shipbuilding industry is also hurting. In Sweden, the shipbuilding industry is composed of 5 shipyards. The Swedish shipbuilding industry is characterized by large-scale product and technological innovation and a very high level of productivity. The shipyards have established a policy of coordination of activities, including the publication and distribution of market analyses. The Swedish Shipbuilding Research Foundation works with the shipowners to examine possible future

market trends. Purchasing activities, computer services, research and development and a common standardization program is being undertaken. Specialization is being carried out in two shipyards--Gotaverken and Eriksberg--where one type of vessel is "built in part in a yard designed for that particular purpose."[31]

In Great Britain, plans for coordinating activities among the shipyards were introduced in 1966, even before nationalization was considered. Activities were coordinated within geographical regions so as to facilitate common purchasing and planning as well as construction. After merging, the shipyards which had remained independent showed profits while those yards which had merged showed losses. The reasons for this outcome were cited as follows: "Unqualified managers now made mistakes relating to entire groups of yards, inadequate control procedures were extended to larger groups, the yards were operated as a unit and, therefore, lost their image and motivation . . . "[32] The British yards which earned a profit did so as a result of a "development of standards based on market research and tight control procedures and realistic cost estimates for pricing."[33]

In late 1977, it was reported that the industrial commissioner of the European Economic Community proposed a 4-year plan for revitalizing the shipbuilding industry including setting production ceilings and providing financial aid for modernization. All financial aid from the state would be directly linked to a policy of general economic rationalization.[34] The formal plans of British shipbuilders indicate an intent to examine the product mix in the various shipyards and other facilities in order to evaluate the potential for introducing a degree of specialization. Furthermore, a conceptual design team will identify "future market opportunities for new ship types and to develop greater standardization of designs."[35]

If the economic rationalization of an industry is desired, nationalization can ease the problems of carrying out the plan. This paper is not an attempt to determine the benefits and costs of rationalization. However, in terms of coordinating activities,

having all firms in the shipbuilding industry "under one roof," might ease the transition from a non-rationalized to a rationalized sector of the U.S. economy. However, for full economic rationalization to be possible, there must be no political obstacles to the process.[36]

## THE ROLE OF THE WORKER

Under nationalization, the government would become responsible for maintaining a labor force. In those countries where nationalization has occurred, the responsibility for a labor force has caused problems in labor relations, particularly with employees who are unionized. Problems arise in particular from the politicization aspect mentioned earlier. Nationalization proponents originally expected that public ownership would dispel any conflicts between labor and management, since the "surplus value" kept by the capitalist manager would be done away with legally.[37] However, as evidenced by recent labor problems, labor appears to be no less in conflict with government than with management.

The Swedish government is dealing with this situation by securing participation for the worker in the decision-making process through collective bargaining. In 1972, an experimental period of worker representation on the Board began. Union members now regard Board representation as an addition to the collective bargaining process in that union members expect the worker-directors to provide them with greater information and knowledge of managerial plans.

In West Germany, a two-tier Board system exists. A Supervisory Board is made up of supervisory personnel who are nominated by workers and shareholders. the second tier is a Managing Board whose members are nominated by the Supervisory Board. The West German pattern has been recommended in a Draft Statute for European Companies which suggests that countries standardize their methods of labor participation in the decision-making process by introducing a two-tier system such as that of

West Germany with workers holding 1/3 of the membership on the Board. All employers, whether members of the trade union or not, would be allowed one vote.[39]

If nationalization of the U.S. shipbuilding industry takes place, it may be politically necessary to maintain a much larger labor force than might otherwise be called for by the marketplace. These costs will not only include the costs of salaries but also the costs involved in administering and being responsible for a larger labor force and the costs involved in organizing, setting up, and administering a potentially new form of labor-management relationship.

## PERFORMANCE OF NATIONALIZED INDUSTRIES

When measured in terms of profit, nationalized firms have not performed particularly well. Many nationalized firms have incurred losses in recent years. For example, during fiscal year 1975, seven of the twelve manufacturing firms experiencing the largest losses in Western Europe were nationalized firms.[40] Also, during 1975, "the profitability of the firms measured by either net income/assets or net income/sales was substantially less for the nationalized firms than for privately-owned European competitors in the same industries."[42] Furthermore, few nationalized industries in Britain . . . "are making much headway in improving their efficiency and few can pretend to pay their way in any real sense."[43]

With respect to the performance of nationalized industries in Britain it may be interesting to examine voters' perceptions of nationalization. As of late July, 1977, a survey showed that the percentage of voters favoring increased nationalization decreased from 38 to 17 in five years. Also, the percentage in favor of denationalization increased from 27 to 38.[44]

Furthermore, in 1974 when the Labour party first announced that the shipbuilding industry was to be nationalized, a survey revealed that 90 percent of the firms <u>supplying</u> the shipbuilding

industry believed that nationalizing the industry would be of no benefit to them; 70 percent, in fact, anticipated difficulties in having to deal with an increased bureaucracy, slow decision making, and obstructions to efficiency.[45]

Obviously the above is not a comprehensive examination of the performance of nationalizaed industries. The available evidence indicates, however, that the performance of nationalized industries is not good.

## CONCLUSION

As indicated in this paper, there is a need for further research into the nationalization experience. However, the evidence presented above shows that nationalization is not the cure-all for bailing out financially distressed industries. Besides failing to deal with the central issue of cost control--there are other problems that arise with the nationalization process; labor-management relations, overmanning and redundancy, political intervention, formulating financial and economic criteria. These difficulties are not susceptible to immediate solutions. Thus, if the shipbuilding industry were nationalized, the government would become responsible for determining the most feasible methods for managing an increased labor force. The government, in essence, would have to "accept the <u>full</u> cost of maintaining the industry's capabilities."[46] Furthermore, changing the form of ownership would not effectively address the problem of least cost construction of Navy vessels. Thus, nationalization does not appear to be an effective means of curing the current ills of the U.S. shipbuilding industry.

## APPENDIX A: FOOTNOTES

1. For further discussions of the rationales for nationalizing an industry and the roles nationalized industries play in an economy, see John Redwood, "The Future of the Nationalized Industries," Lloyds Bank Review, April, 1976, p. 34 and David Roderick Myddleton, Denationalization-The Problem of Recapitalising (London: Aims of Industry Ltd., 1970), pp. 2-3.

2. An interesting thesis has been put forth by Stuart Holland, "Europe's New Public Enterprises," in Raymond Vernon, editor, Big Business and the State (Cambridge, Massachusetts: Harvard University Press, 1974), pp. 25-29, 41. Holland distinguishes between "first-generation public enterprises," which were those created during post-World War II and many of which were created to salvage failing concerns, and "second-generation public enterprises," which were created in the 1960's and through which governments participated in economically healthy rather than failing concerns. The mid- and late-1970's has evidenced a return to government ownership of failing concerns, although it may be important here to distinguish between business concerns which were failing in a post-World War II economy and business concerns which are failing in a non-post war economy.

3. "Europe's Mixed Economies," The Economist, March 4, 1978, p. 93.

4. Martyn Sloman, Socializing Public Ownership, (London: The Macmillan Press, Ltd., 1978), p. 21.

5. National Economic Development Office, A Study of U.K. Nationalized Industries (London, 1976), pp. 80-81.

6. Ibid., p. 87.

7. Ibid., p. 93.

8. John Dickson, "Plight of the Middle Manager," Management Today, December 1977, pp. 67-68.

9. Sloman, op. cit, p. 38.

10. Raymond Vernon, "Enterprise and Government in Western Europe," in Raymond Vernon, ed., op. cit., p. 5.

11. Kenneth D. Walters and R. Joseph Monsen, "The Nationalized Firm: The Politicians' Free Lunch?," Columbia Journal of World Business, Spring 1977, p. 93.

12. Ibid., pp. 93-94.

13. At the time of this writing, more specific data could not be located concerning the extent to which nationalization increases administrative costs or decreases organizational efficiency. This is one area of research which could be developed further.

14. "British Shipbuilders: What Slump?" The Economist, February 11, 1978, p. 114.

15. Daniel Bell, "The Future That Never Was," The Public Interest, Spring 1978, p. 68.

16. Maritime Administration, U.S. Department of Commerce, The Maritime Aids of the Six Major Maritime Nations, 1977, p. III - 43.

17. "Swedish Shipbuilding: More Money Than Sense," The Economist, April 1, 1978, p. 74.

18. "Holland: Dutch Medicine," The Economist, March 25, 1978, p. 96.

19. Kenneth D. Walters and R. Joseph Monsen, op. cit., p. 97.

20. John Redwood, op. cit., p. 40.

21. National Economic Development Office, op. cit., p. 89.

22. Sloman, op. cit., p. 29.

23. National Economic Development Office, op. cit., p. 89.

24. Sloman, op. cit., p. 31.

25. Edward M. Kaitz, Executive Summary, p. 2.

26. John Redwood, op. cit., pp. 34-45 and Kenneth D. Walters and R. Joseph Monsen, op. cit., pp. 94-95.

27. Ibid., p. 100.

28. Ivy Papps, Government and Enterprise, (London: The Institute of Economic Affairs, 1975), p. 39.

29. One offshoot of this comment and one which would require further study is the theory of second best, which, among other things, implies that nationalized industries should not price their outputs according to marginal cost, a criteria which is used by competitively-oriented firms. This theory also is applicable to defense-oriented industries in which a certain level of production is always necessary.

30. Kenneth D. Walters and R. Joseph Monsen, op. cit., p. 97.

31. Report of the Commission on American Shipbuilding, pp. 319-320.

32. Ibid., p. 207.

33. Idem. This is one area for further research. No further explanation for this occurrence was given in the material cited, but further research may be able to provide a more in-depth explanation.

34. "Shipbuilding Docked," The Economist, October 22, 1977, p. 59.

35. British Shipbuilders, Report on Review of Affairs 1977, p. 21.

36. Edward M. Kaitz, op. cit., p. 13.

37. The "surplus value" is a term arising from Marx's labor theory of value and refers to Marx's belief that labor was exploited by the capitalist in that the value of the worker to the capitalist who hires and uses his labor is greater than the value (wages) the capitalist paid him for his services. The difference between the two is surplus value and accrues to the capitalist.

38. Martyn Sloman, op. cit., pp. 51-52.

39. Idem.

40. Kenneth D. Walters and R. Joseph Monsen, op. cit., p. 91. The following chart shows in detail the companies and their losses for FY 1975.

EXHIBIT 1.
The Biggest Money-Losers, Industrial Firms Outside the U.S.
(Fiscal 1975)

| COMPANY | LOSS ($000) |
| --- | --- |
| Usinor | 317,784 |
| Sacilor | 310,733 |
| British-Leyland* | 283,359 |
| Rhone-Poulenc | 205,246 |
| Montedison | 183,912 |
| Alfa-Romeo* | 178,632 |
| Akzo Group | 174,246 |
| Charbonnages de France* | 138,769 |

| | |
|---|---|
| ENI* | 134,869 |
| Renault* | 128,702 |
| Aerospatiale* | 113,816 |
| Italsider* | 110,657 |

* Government-owned firms

Source: Fortune, August 1976

41. Idem.

42. "Britain's Fragile Recovery Is In Trouble Again," Business Week, October 30, 1978, p. 49.

43. "Public Sector Profits Not as Rosy As They Seem," The Economist, July 31, 1976, p. 67. The statistics described in the above paragraph could be focal points for further research; it would be interesting to undertake an analysis of the firms making losses and identifying the number of defense-oriented nationalized firms, as well as determining their financial standing.

44. "Ever Less Popular," The Economist, July 30, 1977, p. 23.

45. Aims of Industry, Ltd., Shipbuilding, Ship Repairing, and Marine Engineering: Supplier's Attitudes Toward Nationalization, 1974.

# APPENDIX B: AN EVALUATION OF THE PUBLIC UTILITY APPROACH FOR REGULATING THE SHIPBUILDING INDUSTRY

## INTRODUCTION

In recent years the seriousness of the contract claims problem and the related issue of uncertainty in obtaining adequate industry support for the Naval ship construction program have led various individuals and groups to consider different ways of procuring ships as alternatives to the present system of competitive, fixed-price contracts. The alternatives under consideration involve more than the matter of contract forms or other procurement rules but also changes in the structure of Navy/shipbuilding industry relationships. One of these can be termed as the public utility approach, advocating a recasting of the U.S. shipbuilding industry as a public utility.

The public utility approach differs from the nationalization approach in that under the former ownership, organization and management of the shipyards remain private, but the central economic decisions are subject to direct governmental regulation. This regulation generally consists of four principal components: control of entry, price determination, prescription of quality and conditions of service, and the imposition of an obligation to serve all customers under reasonable conditions. Thus the basic premise of the public utility approach is: When recast as public utilities, the shipyards will be obligated to provide continuous services to the Navy at reasonable prices.

This paper proposes to examine the implications of the legal and administrative issues involved in the implementation of the public utility approach and to ascertain whether its adoption will facilitate attainment of the vital economic objectives of effective cost control in shipbuilding and maintenance of a viable shipbuilding base over the long-term.

## LEGAL PREREQUISITES FOR IMPLEMENTING THE PUBLIC UTILITY APPROACH

The first prerequisite is, of course, for Congress to declare that the shipbuilding industry is "affected with a public interest" and to pass legislation for regulation of the shipyards. Under the current atmosphere of favoring deregulation or ease of regulation, whether Congress sees fit to impose new regulation on the shipbuilding industry is a political question beyond the scope of the present paper. However, there is little doubt nowadays about the legal question as to whether Congress can make an industry into a public utility by legislative fiat.

In its landmark decision in Nebbia v. New York (1934)[1] the Supreme Court broke sharply with historical precedent and established a dictum (which has been held consistently afterwards), in effect, that there was no longer any constitutional barrier to legislatures imposing any type of economic regulation on any industry within their jurisdictions, where in their judgment it would serve the public interest, provided only that they did not do so in an utterly capricious or discriminatory manner.

Specifically, the Court held: "It is clear that there is no closed class or category of business affected with a public interest, and the functions of the courts in the application of the Fifth and Fourteenth Amendments is to determine in each case whether the circumstances indicate the challenged regulation as a reasonable exertion of governmental authority or condemn it as arbitrary or discriminatory . . . . The phrase 'affected with a public interest' can, in the nature of things, mean no more than that an industry, for adequate reason, is subject to control for the public good . . . "[2]

Therefore, we may assume that should Congress find that a substantial public interest exists in the shipbuilding industry, a legislation for its regulation would not be invalidated by the Court. As a matter of fact, the development of the Tennessee River Valley was originally premised upon national defense.[3] Regulations

for stockpiling of strategic material were supported and upheld for national security. Thus it appears that national defense or national security will constitute a sufficient legal ground for regulation of the shipbuilding industry.

However, the legislative discretion in regulation of industry as permitted by the Court, is not unqualified. The Court will not intervene, "if the laws passed seem to have a reasonable relation to a proper legislative purpose, and are neither arbitrary nor discriminatory, and the requirements of due process are satisfied . . . "[4] Without meeting the due process requirements explicitly, the constitutionality of a regulatory legislation is in doubt until decided by the Court. To comply with the due process requirements, a large body of administrative law, rules and procedures will be brought into play in regulation of an industry as a public utility. This, in turn, raises a question as to whether the public utility approach is an effective and efficient way to resolve the Navy/shipbuilding industry relationship problem and to accomplish the Navy's strategic and economic performance objectives in ship construction.

## ADMINISTRATIVE PREREQUISITES FOR IMPLEMENTING THE PUBLIC UTILITY APPROACH

The due process requirements are grounded in the Fifth Amendment of the Constitution, which is a restriction on the Federal Government. It has been generally interpreted to mean that regulation of industry must not be done in a manner contrary to settled usages and established modes of procedures as without notice and hearing. Under such an interpretation, protection of the rights of a public utility requires that a regulatory commission, acting within the bounds of the powers granted it by Congress, must give adequate notice of its suggested action and accord interested parties a right to be heard, which includes the right to introduce evidence and to object to evidence offered. A commission is given power to summon witnesses and to compel the submission of records,

documents and relevant material. Evidence can be presented by the Commission Staff, by the utilities and other interested parties. A record of the proceedings will be kept and will become the basis for the final decisions.

The regulatory commission will then make findings of fact based on the evidence developed in the record. It has no power to consider evidence developed by its own or outside experts if the parties to the case were not informed of it and given the opportunity to controvert it. Findings of fact must be specific and must be based on the evidence. The sufficiency of the evidence may be determined by judicial review, and a commission's administrative order may also be attacked on the procedural grounds mentioned above.

Many of the basic principles of administrative law were formulated in cases where orders of the Interstate Commerce Commission were presented for review by the courts. The basic restrictions upon commission actions were well summarized in one of the most important of those cases as follows:

"Administrative orders, quasi-judicial in character, are void if a hearing was denied; if that granted was inadequate or manifestly unfair; if the finding was contrary to the indisputable character of the evidence . . . the Commissioners cannot act upon their own information, as could jurors in primitive days. All parties must be fully informed as to the evidence to be submitted or to be considered, and must be given an opportunity to cross-examine witnesses, to inspect documents, and to offer evidence in explanation or rebuttal. In no other way can a party maintain its rights or make its defense. In no other way can it test the sufficiency of the facts to support the findings; for otherwise, even though it appeared that the order was without evidence, the manifest deficiency could always be explained on the theory that the Commission had before it extraneous, unknown, but presumptively sufficient information to support the finding."[5]

In summary, regulation of public utility follows basically an adjudicatory process with heavy emphasis on protection of the

rights and fair treatment of the parties concerned. In addition, as mentioned earlier under certain circumstances a utility company may appeal from Commission orders to the courts. Hearings in the Federal Courts may be conducted as a trial de novo. A master may be appointed to take new evidence and the whole cycle of procedures repeated at enormous expense and time.

The extent to which the substantive decisions and policy determinations of regulatory commissions ought to be subject to judicial review is an historic theme in U.S. constitutional law. The courts, at certain times, in effect have substituted their judgment for that of the regulators in reviewing the compatibility of their decisions with the constitutional amendments or with the legislative intent, and, at others, deferred almost without question to the commissions' presumed expertise.

While following all of these established procedural requirements, what do the commissions do in the substantive area of economic regulation of industries? Public utility commissions spend the major part of their time, by far, directly or indirectly regulating prices or "rate or fare levels." The commissions decide what <u>total revenues</u> the companies are entitled to take in, then adjust permitted "rate levels," either selectively or across the board, to yield these totals. They typically do this by undertaking a thorough examination and <u>appraisal of total company costs</u> in a recent, "test" year (or a number of years). In this way, item by item, they build up an estimate of total permissible "revenue requirements." On the basis of this total, adjusted as much as possible in known or readily predictable changes between the test year and the period for which rates are to be ascertained, the company is ordered or permitted to adopt certain rate schedules. <u>Determinations of rate levels in such a way are really determinations of permissible total revenues</u>.

The process of determining permissible revenues falls traditionally into the following three parts, each of them involving an enormous variety of problems and incurring a host of legal and economic controversies. These parts or steps are: (1) deter-

minations of operating costs and capital consumption rates (or annual depreciation allowances), (2) determination of the "rate base", involving various procedures and problems in valuation of capital investments, and (3) selection of the permitted rate of return, involving the problems in measuring the cost of capital and differential compensations for different types and degrees of risks assumed.

To perform these basic technical tasks adequately, a regulatory commission obviously needs an expert staff to assist the regulators to pass judgment on the evidence presented by the interested parties and to develop new and independent evidence. As applied to the shipbuilding industry under the public utility approach, the commission staff, in turn, must possess detailed expert knowledge of the shipyards' operations, systems of accounts, capital equipment installation and utilization, technology employed, etc. To adjust their determinations of fact for the future periods of decision application, <u>they must also know how to estimate the various cost trends and the market trends of demand for the industry services and products</u>. Since the Navy is the prime customer of the shipbuilding industry, the details behind its missions and force-structure statements as well as its long-range plan and budgeting for ship construction certainly have a lot to do with the market demand estimates. Thus the commission staff will have to duplicate the management knowledge of both the shipbuilding industry and the Navy.

The other major functions normally performed by a regulatory commission are control of entry into the regulated market and prescription of quality and conditions of service. In a fundamental way, regulation is an explicit replacement of competition with governmental orders as the principal institutional device for assuring good performance. The regulatory agency determines specifically who shall be permitted to serve; and when it licenses more than one supplier, it typically imposes rigid limitations on their freedom to compete. The legal instruments used for administrative control of entry into the regulated market

are the well-known franchises and "certificates of convenience and necessity." Through these instruments a regulatory commission or agency controls basically the potential fragmentation of the market, and it does not really control the size of the market, which, of course, depends to a very large extent on the demands of the customers.

More or less as quid pro quo for the special monopolistic or quasi-monopolistic privilege of serving the market, the public utilities are obligated to accept governmental regulation on price, quality and conditions of service. The governing statutes generally empower commissions to investigate and issue findings on whether the services offered under their jurisdiction are "unjust, unsafe, improper, inadequate or insufficient" and to promulgate rules for their improvement. The rules adopted cover matters such as safety standards, minimum physical specifications (e.g. accuracy of meters, voltage of electricity, heating value of gas, etc.), requirements of promptness in meeting customer demands, extension of service to new customers, controls on abandonment of service, provisions of special facilities and arrangements, and certification of new entrants. In most of their actual practices, however, only minimum service standards are formulated. If the public utility approach is implemented for regulating the shipbuilding industry, whether the complex performance standards for Naval ships can be formulated as rules by a regulatory commission is an open and untested question.

Finally, from the administrative point of view there is a legal issue regarding the objects of regulation. Traditionally the objects of public utility regulation are separate legal entities, which the regulatory agency can hold accountable for their actions and responsible for executing agency orders. In recent years, a number of large shipyards have lost their independent status and become divisions of large conglomerates. Thus in implementing the public utility approach it may become necessary to require divestiture of the shipyards, or as a minimum to reorganize them as subsidiary corporations of the conglomerates. This requirement

may constitute another source of controversy and litigation.

## ECONOMIC PERFORMANCE OF THE SHIPBUILDING INDUSTRY UNDER PUBLIC UTILITY TYPE OF REGULATION

In some quarters, it has been maintained that the establishment of a shipbuilding regulation agency should eliminate almost all direct Navy/industry conflicts[6], particularly those on claims problems. We regard this an an erroneous view. In the first place the establishment of regulation as far as this aspect is concerned involves merely the transfer of conflict-resolving authority from one government agency to another. In the second place, as pointed out earlier, a regulatory process is essentially an adjudicatory one involving adversary proceedings. The Navy as a party of interest will have to participate in those regulatory hearings to present its own evidence and to evaluate or refute the evidence presented by the shipbuilders. Thirdly, if the regulatory commission orders certain claim adjustments, the payments of them, of course, will come out of the Navy's budget. Thus in both procedural and substantive senses the Navy cannot be absolved from the conflict situation with the shipbuilding industry.

The real underlying economic issues, however, are not presence or absence of conflicts and claims, but operating efficiency (or effective cost control) and the related problem of long-term economic viability. Thus the big question for consideration is: Will the public utility type of regulation enhance the likelihood for the shipbuilding industry to accomplish those two basic objectives? We shall attempt to answer this question first by identifying the economic characteristics of successful public utilities and then by examining the operational tendencies of the companies under regulation.

One of the prominent characteristics of successful public utilities is that they are capital-intensive. There is an inherent tendency for a capital-intensive firm to serve a larger and larger segment of the market, leading to decreasing unit costs. A large

capital investment makes for high fixed costs, the total of which does not vary with any changes in output. This allows the firm to achieve lower unit costs at a larger volume of business over which these fixed costs may be spread. Also, under certain circumstances with larger capital investments significant economies of scale can be reaped, which again permit realization of lower unit costs. It is quite possible that such large capital investments would not be made, if monopolistic or quasi-monopolistic rights to the market were not granted by a regulatory agency, or if the market were fragmentized by the forces of competition. Thus in this type of situation regulation through its control of entry makes a contribution in permitting the realization of lower unit costs. On the other hand, the shipbuilding industry cannot be characterized as capital-intensive but labor-intensive.[7] And this characteristic is not the result of excessive competition or over-fragmentation of the market, but is an intrinsic feature of construction type of business and a response to irregularity in market demand. Hence market share control via regulation per se will do little to achieve lower unit costs in shipbuilding.

Another major characteristic of successful public utilities is that they serve markets of growing and comparatively stable demands. Such demand conditions permit the utilities to plan for the future with relatively greater certainty and to develop financial structures to insure their long-term viability. Regulation helps in this respect, too, as it assures the utilities complete monopoly on large shares of the growing demand. On the other hand, if the total market demand is shrinking or highly unstable, regulatory agencies cannot do much to insure effectively business viability as witnessed by the bankruptcies of some of the regulated railroad companies. This is because regulatory agencies do not actually guarantee profits; they simply establish permissible prices to earn "reasonable rates of return," if certain cost and market demand conditions materialize. It is a well-known fact that demand for ships is, at best, episodic. In the case of civilian vessels, U.S. shipbuilding is subject to fierce foreign

competition. Therefore, without power to control the demand for ships, regulation by itself cannot help to sustain the long-term viability issue of the shipbuilding industry. In other words, the viability issue will have to rely heavily upon the Navy's ship construction program and special methods of financing ship procurement as well as the national maritime policies of the Federal Government.

Additionally, there are inherent tendencies for businesses under regulation to restrict their efforts for cost control. To the extent that regulation effectively restrains public utilities, via price or rate determinations, from fully exploiting their earning power, it diminishes their incentive for improvement in efficiency. And if it permits them to earn only the cost of capital, it creates a situation in which any inefficiency can simply be passed on in higher prices later without injury to their owners. This is particularly true when the time or opportunity for price or rate redetermination is approaching. It does not pay from the private point of view if efficiencies produce profits higher than the permitted "rate of return", for these will be used as evidence for lower prices or rates in the later redetermination proceedings. Paradoxically, lack of incentive for improvement in efficiency would also tend to happen when profits were low, since the utilities' attention would shift to constructing the strongest cases for price or rate increases.[8] Furthermore, some writers have pointed out that there is a temptation for public utilities to use capital wastefully in order to inflate their rate bases and hence their total permissible profits.[9]

Conceivably, a regulatory agency can exert effective control over operating expenses and capital outlays of the public utilities under its jurisdiction. But this would require a detailed, day-by-day, transaction-by-transaction, and decision-by-decision review of every aspect of the regulated business operations. The regulators could do so only if they were prepared to duplicate the role of business management itself. The courts have never been willing to have a regulator fill this role of management and

doubtless with good reason, since it is difficult to see how a business can function under two separate managements. Therefore, when the controlling decisions are made, they are made in first instance by private management. Regulators can do little more than review the major decisions after the fact, permitting here and disallowing there. In these circumstances they have been unable to substitute their judgments for those of management; and often when they tried, the courts have denied them the authority to do so, except in cases of obvious and gross mismanagement.[10]

With respect to technological innovations and the related issue of capital investment, regulation itself tends to be conservative. This conservatism is enhanced when, as is typically the case, regulators cannot themselves initiate or force the utilities under their supervision to undertake risky investments or to embark on new ventures, because they are dealing with "other peoples' money."

In short, regulation in a private enterprise system almost inevitably operates only at the periphery of the decision making process. Regulators can presumably exert a considerable influence on the level of profits. They can and do control discrimination in rates and service. But in the preponderant portion of the cost of service they can at most disallow individual components that are flagrantly inflated; and as for quality, they can set minimum standards, and impose limited penalties when service is obviously bad. They are essentially incapable of assuring that performance will be positively good.

## CONCLUSION

Assuming a political climate favorable for legislating regulation, which we believe is not the case at the present moment, it will take Congress a couple of years to complete legislation in regulating the shipbuilding industry as a public utility. Then a minimum of two to three years will be needed to organize a regulatory commission well equipped with an expert staff to

formulate rules and procedures for the particular undertaking and to carry out the substantive aspects of economic regulation. During this long period of gestation, a large element of uncertainty will be created in the Navy/shipbuilding industry relationship, which will necessarily cause disruptions to the Navy's short-term ship construction program and delays in its long-range program. Therefore, perhaps it is wiser to search for a less disruptive approach in restructuring the Navy/shipbuilding industry relationship.

Moreover, as indicated in the preponderant experience of the past, regulation has been a negative process, with the initiative coming from the regulated companies; private parties act, and commissions react. From this fact follows most of the other severely criticized characteristics of the regulatory process. It proceeds on a case-by-case basis, and on issues usually framed and a record made by contesting parties, rather than for the formulation of general policy of the public and national concern. When regulators want to break new ground, they are constrained by elaborate rules of evidence and the established requirements of the administrative law. There are vexatious restrictions that deny public utility regulators the right to consult informally with industry representatives, their own staff, or outside experts, when such ex parte contacts would be conceived of as prejudicial infringements on the impartially of the regulators. In other words, the adjudicatory process tends to degenerate into an "over-judicialization of procedures."[11] Thus, coupled with other reasons given earlier, it is difficult to expect that implementing the public utility approach would help promote a high level of economic performance in the shipbuilding industry.

Finally, even with the regulatory process, there is no way for the Navy to disengage from the "engagement process" in its relationship with the shipbuilding industry. First, as a party of interest the Navy will be involved in all hearings conducted by the regulatory agency charged with the responsibility to regulate shipbuilding. Second, in adversary proceedings there will be

nobody to speak in the Navy's interest but the Navy itself. Most important of all, as mentioned above, since regulation is not an effective way to assure adequate industry performance, the Navy cannot and should not abandon its responsibilities for attaining effective cost control and maintaining long-term viability in the shipbuilding industry in the interest of national security.

## FOOTNOTES

1. Nebbia v. New York, 291 U.S. 502.

2. Ibid. 536-537.

3. Eli Winston Clements, Economics and Public Utilities, p. 33.

4. 291 U.S. 536-537.

5. ICC v. L & N.R.R. 227 U.S. 88.

6. "Monterey Report", A Preliminary Evaluation of Three Alternative Navy/Shipbuilding Industry Structures (September, 1978), p. 6.

7. Edward M. Kaitz, The Profitability of the U.S. Shipbuilding Industry, 1974-1977.

8. Alfred E. Kahn, The Economics of Regulation: Principles and Institutions, Vol. II, Chapter 3.

9. The famous A-J-W effect, ibid.

10. William K. Jones, Cases & Materials in Regulated Industries.

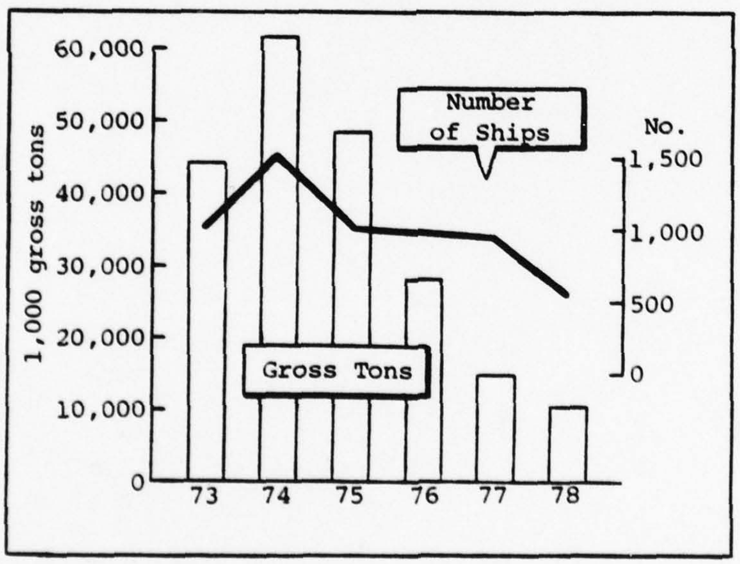
11. Harry A. Trebing, "A Critique of the Planning Function in Regulation", Public Utilities Fortnightly, March, 1967.

## APPENDIX C: CURRENT STATUS OF THE JAPANESE SHIPBUILDING INDUSTRY

### INTRODUCTION

The global shipbuilding industry has been faced with increasing financial difficulties since the 1973 Arab oil boycott and the subsequent post-oil crisis recession. Japan is no exception. The steady business deterioration of the shipbuilding industry has wider implications for Japan than perhaps any other country since, based on tonnage, it is the world's largest shipbuilding nation, responsible for at least 50 percent of total world output.

SHIPBUILDING ORDER BACKLOGS
IN JAPAN




1

NOTE: Table covers vessels of more than 2,500 gross tons.

Prior to the oil crisis, the outlook for Japan's shipbuilding industry had been optimistic. In the early 70s, Japan was in the midst of an unprecedented boom in tankers. The increase in orders for new ships was due to a variety of reasons:

1) Overseas shipowners found it easy to raise money in the international money market.[2]

2) Many owners were hedging against a further inflation in shipbuilding costs by ordering tankers reasonably well in advance of anticipated need.

3) Many shipowners were apparently willing to gamble on the continued growth of ocean trade.

As a result, in 1972, new orders received by Japanese shipbuilders totaled 18,070,000 gross tons, and for 1973, 25,820,000 tons.[3]

However, the oil crisis and the recession which followed brought a decline of demand for new ships, especially for tankers. Shipowners, concerned with the over-supply of tankers and a prolonged recession scaled-down their orders for new ships and, in some cases, even cancelled contracts already placed with Japanese shipbuilding companies.

This trend poses a serious problem for the Japanese shipbuilders since their survival and development is heavily dependent on the construction of mammoth oil tankers. New orders placed with the industry for construction in 1977 amounted to 5,924,000 gross tons, or 50 percent of that of fiscal 1976, and roughly a level about that of March, 1964.[4] The Japanese Ministry of Transportation (MOT) now feels that orders will stay low for the next few years, reaching a bottom of 2,490,000 gross tons by fiscal 1980.[5] Although the decline in orders is a world-wide phenomenon, its seriousness becomes even more evident when compared to Japan's present annual shipbuilding capacity of 19 million gross tons.

In view of the difficult situation now facing the industry, and its heavy dependence on ship export (80 percent of total production), the shipbuilders are faced with the urgent necessity to reorganize the industry in order to survive. No one doubts the need for a program of rationalization. However, disagreements still exist over what the problems are, what measures should be implemented and whether any of these measures would, in fact, help the ailing industry.

## PROBLEMS

### A. Yen Appreciation

The appreciation of the yen comes at a most inopportune time for the shipbuilders in that it has forced prices up at a time when demand has slipped substantially. In addition, the current over-tonnage problem has further aggravated the demand-supply situation.[6] More difficult to deal with has been the long-term practice for contracts placed with Japanese yards to be denominated in yen. This shifts the exchange risk to the shipowners. Given the rapid increase in the value of the yen, some prospective shipowners, e.g., the Union of Greek Shipowners, have been forced to request outright price reductions for vessels already on order, other forms of financial aid, and even periods of grace for deferred payments on their orders. The Japanese thus face a major dilemma. On the one hand, they fear a deluge of similar demands from other shipowners in Hong Kong and Western Europe should they give in to the Greeks. On the other hand, should they refuse to comply with these risks they risk the possibilities of contract cancellations and potential bankruptcy. Thus far, a number of Japanese builders have complied in varying degrees with the Greek demands since they constitute, along with Liberian and Panamanian shipowners, one of the three major customers for Japanese-built ships.[7] The rationale behind this is that obtaining part of the funds due them is better than none at all, let alone losing the Greek owners as future customers.

Other overseas owners have either cancelled existing contracts outright, resold their contracts to others, or simply shied away from placing new orders. For example, a Liberian owner cancelled two tankers on order from the Ho Misue Engineering and Shipbuilding Company. Another customer (Terukuni Kaiun) cancelled its order for 230,000 dwt tankers placed with Ishikawajima-Harima Heavy Industries.[8] The Japanese builders are trying to keep the

completed vessels in operating condition while looking for new buyers.

## B. LDC Competition

Japan also faces growing competition from developing nations such as South Korea, Taiwan, and Brazil. The LDC's operate from newly constructed facilities with low labor costs. Because of this, they are now able to offer prices that Japan is unable to meet. The most recent example of this type of competition arose between Japan and South Korea on an international tender invited in 1977 by an Australian company. Based on prior history, it was expected that the minimum offer for such a carrier would be $52,000,000. However, bidding started at $37.8 million. Japan finally won the bidding with a profitless offer of $25 million.[9] However, in the face of cut-backs in orders, the choice was between the lesser of two evils; accepting an unprofitable order or no contract at all.

Such practices cannot be maintained for long periods of time irrespective of the pressing realities of excess capacity and surplus workers. Financial reserves have thus far covered the mounting deficits. However, it would appear that the Japanese companies have reached their limit--where losses can no longer be sustained and where yard closures may be in order.

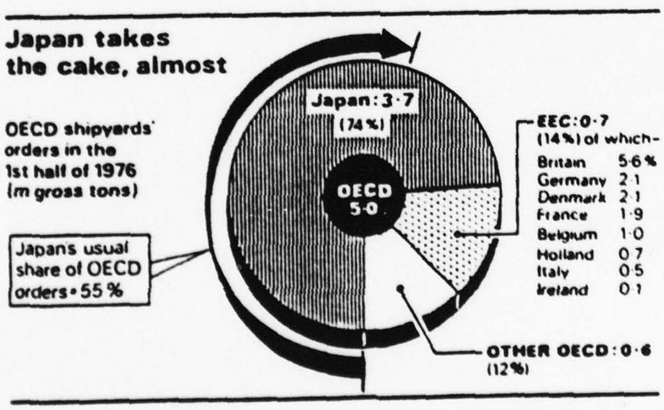
## C. EC vs. Japan

Poor business prospects since 1973 have intensified further the competition between Japanese and European shipbuilders. Even during periods of normal demand, the Europeans found it difficult to compete with the low prices offered by the Japanese. Japanese costs were reported to be as much as 10 percent lower than European due to lower labor and material costs, and the use by the Japanese of advanced production techniques. In addition, Japanese steel mills are conveniently located close to the shipyards, therefore

requiring the shipyards to have only one week's supply of inventories as opposed to a 1 to 3 months supply in Europe.[10] This cuts down on the amount of money tied up in inventories.

In recent years, inflation has brought total ship construction costs up by 30 to 40 percent.[11] Despite this, the Japanese have maintained low prices in light of the keen competition they now face from the LDC's. Increasing contract cancellations, as noted earlier, have also forced them to offer lower prices to prospective buyers.

As a result of this, in 1976 Japan overwhelmed its European counterpart by obtaining 84 percent of total OECD shipyard orders, as opposed to the more normal 55 percent share.[12] Because of the drop-off in demand for tankers, the increase in Japan's share came from bulk carriers and dry-cargo vessels, traditionally Europe's specialty.



13

Negotiations between the Europeans and Japanese have produced no substantive compromises acceptable to both. The Japanese have repeatedly promised a price boost of up to 10 percent in addition to cutting back exports to those European countries having the most difficult time with their shipbuilding industry.

However, despite numerous requests, Japan has refused any market-sharing arrangements with the Europeans which might involve a 50-50 split of all new ship orders from the OECD countries (24 in all). Any such agreement will not, most likely, be accepted by the Japanese until their operating rate is boosted from its current 30 to 40 percent of capacity. At present, the Europeans can only lament their decreased share of the world shipbuilding market from 51 percent in 1960 to 22 percent in 1975, with little hope for an improvement in its share of the market for at least the next 5 years.[14]

# INDUSTRIAL RATIONALIZATION

## A. Introduction

The Japanese spent much of 1976 and 1977 attracting prospective shipowners to their yards by offering attractive below-cost prices for ship construction. The rationale behind this was the perceived need to obtain an amount of new orders that was both necessary and sufficient to keep their yards operating, albeit at the risk of failing to break-even. However, it became increasingly evident these past few years that such a practice could not be sustained for long periods of time in the face of both a decline in the retained earnings available to cover deficits and intense criticism from Western Europeans who claim the Japanese are pushing them to the wall by "dumping" ships and other products on the market at less than their estimated costs of production.

In the face of such a gloomy outlook in the short-term prospects for the industry and uncertainty in the long-term picture, the Japanese are groping for "survival measures" and alternative ways to fill their orderbooks.

## B. Diversification

Efforts to secure orders for ships are, of course, continuing. At the same time, the Japanese are trying to reduce their dependence on ship construction by diversifying into other fields. For the medium-scale and smaller firms this is not possible since they are engaged exclusively in shipbuilding. For the six major shipbuilding companies, however, where the shipbuilding division comprises anywhere from 20 percent to 60 percent of their operations, this has been a viable alternative since they now manage a number of otherwise diversified businesses.[15] The other divisions consist of electrical machinery, boilers, chemical machinery, automobiles and even aircraft (as is the case with Mitsubishi Heavy Industries).[16]

WORLD'S TOP TEN SHIPBUILDERS

| (dwt completed) | 1973 | 1974 |
|---|---|---|
| Mitsubishi Heavy Industries | 5,056,949 | 7,358,361 |
| Ishikawajima-Harima Heavy Industries | 4,281,746 | 5,653,152 |
| Mitsui Shipbuilding & Engineering | 2,840,330 | 3,159,931 |
| Hitachi Shipbuilding & Engineering | 2,636,680 | 2,784,124 |
| Kawasaki Heavy Industries | 2,267,462 | 2,598,096 |
| Nippon Kokan K.K. | 2,174,216 | 2,443,155 |
| Sumitomo Shipbuilding & Machinery | 1,528,230 | 2,195,900 |
| Gotaverken (Sweden) | 1,225,214 | --- |
| Sasebo Heavy Industries | 1,187,915 | 1,146,960 |
| Odense Steel Shipyard (Denmark) | 1,140,000 | --- |

17

This multiproduct feature of the shipbuilding companies provides them with an unusual advantage of flexibility in dealing with changing market conditions. Low profits from the shipbuilding division may be offset with high profits in other divisions.

SHARES OF SHIPBUILDING AND ON-LAND PRODUCTS
IN MAJOR COMPANIES (1961)
(in percent)

| | Shipbuilding | On-Land Products |
|---|---|---|
| Mitsubishi Heavy Industries | 25.4 | 74.6 |
| Hitachi Zōsen | 62.9 | 37.1 |
| Ishikawajima-Harima Heavy Industries | 31.6 | 68.4 |
| Kawasaki Heavy Industries | 53.6 | 46.4 |
| Mitsui Zōsen | 64.3 | 35.7 |
| Uraga Dockyard | 88.3 | 11.7 |
| TOTAL | 37.6 | 62.4 |

18

Expansion of other divisions hopefully will help cover the growing shipbuilding deficits. For instance, some companies are

now emphasizing the production of anti-pollution equipment. Business has been excellent in this market since corporate investment in anti-pollution equipment has remained high despite the recent recession in Japan. Mitsubishi Heavy Industries, Kawasaki Heavy Industries, and Hitachi Shipbuilding now report sales of anti-pollution equipment at 10 percent of their total sales. [19]

Drilling rigs and other equipment vessels for offshore oil development also appear to hold promise for companies like Mitsubishi and Mitsui. Despite the fact that entry into this business is technologically difficult, and, in adddition, requires heavy capital expenditures, the Japanese have managed to attract both major U.S. and Scandinavian buyers. Ironically, the Japanese shipbuilders are apparently finding comfort in the demand for oil rigs brought on by the very oil crisis which had forced them into financial difficulties.

## C. Work Force Adjustment

The Japanese government has become an increasingly active participant in the shipbuilding industry by insisting that an equilibrium between supply and demand be reestablished within the industry. Because the industry is labor intensive, a reduction in capacity will require significant cuts in the size of the shipbuilding labor force.

On November 25, 1976, the Japanese Ministry of Transportation gave heretofore unprecedented "advice" to the shipbuilders which "suggested" that they rapidly reduce the size of their labor force. This government "advice" affected some 40 major medium-sized and small shipbuilding companies with facilities capable of building an annual total of 10,000 gross tons or more. The maximum operating level for each company is based on the "percentage ratio to the highest peak registered by each company during the past 3 fiscal years."[20] For fiscal year 1977, the MOT aimed to decrease annual working hours to only 72 percent of the 1973-75 peak level, and for fiscal 1978, a figure of 65 percent was set forth in its advisory documents.[21]

On paper, this idea sounds harmless enough. However, it poses some serious hardships for Japanese shipbuilders who, on one hand, realize the need to cut back on costs, but, on the other hand, want to retain the long-standing "lifetime employment system."[22]

Thus far, about 20,000 out of a total of 343,000 workers have "quit" their jobs.[23] For the most part, most of those laid off have been employees of subcontractors, or temporary workers who are not under the "lifetime employment system." Rather than fire regular employees, the shipbuilding companies have resorted to a variety of alternatives. For those companies which possess land machinery divisions or subsidiaries, surplus workers have been transferred to those workshops. Hitachi Shipbuilding and Engineering reported that it encountered no serious difficulties in transferring employees to its land-equipment division because it plans to shift its emphasis on shipbuilding (60 percent of total production) to land-equipment divisions (currently 40 percent of total production).[24] Some companies have ceased hiring new workers or filling vacancies; still others have refrained from rehiring those who are reaching retirement age, and are cutting down the number of outside workers.[25] In addition, many officers and office managers are facing a cut in salary.

Although these alternatives have relieved somewhat the problem of surplus workers, they nonetheless do not foreclose the almost certain need in the near future to cut regular employees from the payroll as orders continue to decline with no relief in sight. Many companies have already resorted to temporary lay-offs and volunteer resignation from their regular workforce. In extreme cases, some workers have been fired.

To help alleviate the situation, MOT stepped up various measures, both legal and administrative, to help financially needy companies, e.g., tax-relief and unemployment relief. Specifically, the MOT wants to provide funds to retrain surplus workers. Whether this will be possible or not depends on where and when the MOT (within its budget allocations) can come up with the extra funds needed for such a project.

## D. Physical Capacity Adjustment

Man-hour reductions, thus far averaging around 40 percent, have continued under MOT's administrative guidance since April 1977. At the same time, it has become obvious that these efforts must be supported by reductions in the physical capacity of the yards. To accomplish this, the Council for Rationalization of Shipping and Shipbuilding Industries has recommended that, by April 1, 1979, its 61 member companies (95 percent of Japan's total ship construction capacity) reduce capacity by some 15 to 40 percent.[26] For shipyards, this means a drastic sell-off or closedown of excess buildings, land and other assets. They will have to engage in either scrapping, mothballing, or converting their facilities to other purposes.

This plan is probably the most drastic plan among the government's "survival measures" thus far. Any yard with a capacity of 5,000 gross tons or higher will be included in this present plan, unless, of course, it can come up with an alternative plan which meets the industry's requirements.[27]

For the shipbuilding companies, the difficulty lies in deciding on what facilities it should mothball, what it should sell to the government, and what it should merely scrap. Apparently, whatever redundant facilities can be applied to non-maritime use will be thus diverted. None will be channeled toward vessel repairs because that is regarded as unfeasible in terms of that industry's future supply/demand situation.[28]

However, it would appear that the burden of this program rests heavily on the Japanese government. For the government, the problem will be to sell off the facilities and land acquired by it from the various shipyards. Fortunately, it is possible to resell a portion of purchases for other uses. A more serious problem even than the resale of plant and of equipment is raising the estimated $508 million which will be needed for the program. The government will clearly have to provide funds for much of the assistance although the wealthier shipbuilding companies and commercial banks

will also have to play some role by providing as much as 50 percent of the money needed.[29]

Hopefully, the implementation of the program will encourage either the integration of facilities or the actual disposal of some shipyards. Thus, it is unclear how many shipbuilding companies will be around in another year or two. The government and industry both appear willing to let the "natural selection process" prevail on the assumption that bankruptcy for some will ensure survival of the industry as a whole.

Those strong or lucky enough to survive after the program will be given financial assistance, not just from the government, but also from fellow shipbuilders. All remaining companies will be required to provide "cost covering contributions of a financial nature" to the running of the operation.[30] If these firms should require further loans, the government has agreed to give them support in terms of interest subsidization. Thus far, no major commercial banks in Japan have ventured to agree to such financial involvement. Obviously, the success of this program will depend on their cooperation since the goverment alone is unable to sustain a program of these financial dimensions.

## E. Change in Demand Structure

In addition to the above, there is yet another option open to the government--that is to affect a change in the domestic demand for ships by increasing domestic demand for ship construction.

This option can be approached in either of two ways: The government can promote the earlier scrapping of domestically owned ships or it can create new demand through advanced placement orders. In regard to the first, the government has pushed for a program of scrapping approximately 3,000,000 gross tons of superannuated tankers and cargo ships over a three year term beginning in April, 1979.[31] In addition, Japan's Shipbuilders' Association has devised a plan which would involve the Japan Development Bank in setting up a program to encourage the

additional construction of domestic ships.[32] The shipbuilders are now pushing for increased government expenditure on purchase of naval patrol crafts. Although the government is worried over the political impact of such an undertaking, it has apparently approved an increase in patrol ships for the Maritime Safety Agency (equivalent to the U.S. Coast Guard). The plan calls for an increase in the present number of patrol ships from 39 to a total of 349.[33]

Currently, it would appear that the cost of such an effort to affect change in demand is very high. For example, it would cost the government approximately 1000 billion yen or $5.8 billion to scrap and build 3,000,000 gross tons of tankers and cargo ships.[34] To set up funds necessary for such a mammoth undertaking obviously means a reallocation of reserves from other sectors of the economy which themselves have also been hard-hit by the current recession. However, the government is obviously so concerned with the survival of the shipbuilding industry, the third largest export industry next only to steel and automobiles, that it is willing to do it at a very high cost.[35]

## F. LDC's -- Competition or Salvation?

Should the rationalization measures taken thus far alleviate the problems faced by the shipbuilding industry the Japanese government will still have to face another serious problem: that of losing its place as the number one shipbuilding nation in the world to LDC's. Even if international demand revives, Japan may find itself edged out of new orders by LDC competitors. If this happens, Japan may have to deal with the same set of problems now facing its European competition.

Because of this, Japan's MOT is trying to devise a policy which may serve effectively as a countermeasure against both contingencies. Thus it intends to incorporate in its coming fiscal 1979 budget room for a new plan of action which calls for the sale of ships in the 400,000 to 500,000 gross tons range.[36]

Further, Japan which previously reacted negatively to LDC requests for ship exports has now altered its position completely citing for its decision:

1. "Countries in Southeast Asia, Africa, and the Middle East are moving to strengthen their shipping along with building up their economies," and

2. "Promoting ship exports to developing nations will benefit the domestic shipbuilding industry which is suffering from a serious shortage of orders." 37

Legally this poses no problems for Japan. Although the OECD has set the interest rate for long-term financing for ship exports to LDC's at 8 percent to keep competition at a manageable level, it allows lower interest rates if ships are sold as "economic assistance."[38] To comply with this ruling, Japan as well as an increasing number of other nations are selling their ships to LDC's as part of an "economic assistance" program.

To date, Japan has received ship export requests from 22 LDC's. These requests total 220 ships amounting to 720 billion yen or approximately $4.2 billion.[39] In addition, Japan is actively granting aid to LDC's in order to build ships as part of a joint venture project. The sale of a variety of machinery and equipment to LDC's produced by Japan's diversified shipyards is also being actively promoted.

By these very actions, Japan may well be undermining its present position as the foremost shipbuilding nation in the world. However, without these measures Japan would most likely lose its enviable position to labor-abundant LDC's. In this context, joint venture projects can be seen as an attempt to at least ensure Japanese control, albeit a partial one, over LDC markets and long-run profits, i.e., by helping LDC's develop their shipbuilding industry further, Japan is inevitably increasing LDC competitiveness.

## CONCLUSION

With government aid, Japanese shipbuilders have managed to partially rationalize their production facilities and manpower as well as find new markets and products. However, based on our analysis it is doubtful whether any of these rationalization efforts will be adequate to the task in the short-term since many problems facing the Japanese industry are created by forces outside its control. Others are attributable to excessive investment in plant and equipment which are simply miscalculations on the part of the shipbuilders, who, like their American counterparts, anticipated a boom that never materialized.

In trying to solve many of their problems, Japanese shipbuilders increasingly find themselves caught in vicious cycles:

1. The shipyards need to bring in work to keep their men employed under the traditional "lifetime employment system." Since the only way to bring in work is to accept orders at low unprofitable prices, the industry faces imminent bankruptcy unless it can cut back its manpower and operating costs.

2. In order to reduce costs, the shipbuilders are being forced to divest themselves of a portion of their facilities. But in so doing, they find themselves with even lower profits.

3. To cover growing deficits, the shipbuilders have been diversifying by expanding their machinery divisions. These new departments may cover the loss temporarily, but this may be a self-defeating move because of the growing competition between indigenous machinery divisions. The continued appreciation of the yen which makes exports even more expensive cannot be expected to improve the situation.

This is not to say that these rationalization measures are totally *ineffective*. Indeed, the most important contribution made by the rationalization program to date has been the gradual weeding out of inefficient shipyards. The rationalization process has also begun to eliminate the traditional double structure of the industry (where a few major builders dominate the market and smaller

companies get a few orders here and there) by forcing smaller shipbuilders into bankruptcy. If and when the international market for ships improves it is these few efficient, well-run companies which will serve the industry. Because of the facilities reduction program, the survivors may find themselves in a better position to bargain with the competitive up-and-coming LDC yards.

On the other hand, the Japanese shipbuilders may face a new dilemma. Should world demand increase rapidly (e.g. as in the case of war), they may not have sufficient capacity to competitively and profitably meet this new demand.

## APPENDIX C: FOOTNOTES

1. Shizuya Kuraka & Shinichi Kamata, "Shipbuilding Slump Assumes More Gravity with Lasebo Case Forming Dark Background," The Japan Economic Journal, July 4, 1978, p. 15.

2. The international money market in the early 1970's was characterized by easy money, i.e., high liquidity and low interest rates.

3. Atsuko Chiba, "Adrift in the Sea of World Recession," Far Eastern Economic Review (FEER), November 28, 1975, p. 21.

4. "Ship Orders in Fiscal '77 Recorded Decline of 41 % Japan Economic Journal, May 2, 1978, p. 1.

5. "Shipbuilding Capacity Cutback Urged," Japan Economic Review, August 15, 1978, p. 12.

6. Declining demand is a reflection of two factors directly attributable to the oil crisis: 1) a stagnation in oil transport worldwide, and 2) a step-up in energy-saving measures and self-sufficiency in oil which countries worldwide are promoting.

7. In this regard it should be noted that a large proportion of the Liberian and Panamanian owned ships are "flags of convenience." Actual data for the exact number of "flags of convenience" in existence or as to how many are American-owned is unclear. See also A. E. Cullison, "Japanese Yards Hurt by Tough Competition," The Journal of Commerce, September 25, 1978, p.34.

8. Susumu Awanohara, "Japan: Groping for 'Survival Measures'," FEER, February 28, 1975, p. 8.

9. A. E. Cullison, Op. Cit., p. 34.

10. Report of the Commission on American Shipbuilding, (COAS), p. 268.

11. Susumu Awanohara, Op. Cit., p. 9.

12. "Piracy in the Shipyards," The Economist, November 6, 1976, p. 94.

13. Ibid. p. 95.

14. "Europe: Failing to Fend off Japan's Shipbuilders," Business Week, February 28, 1977, pp. 42-43.

15. COAS, p. 251.

16. Tuvia Blumenthal, "The Japanese Shipbuilding Industry," in Hugh Patrick, Japanese Industrialization and Its Social Consequences (Berkeley: University of California Press, 1976), pp. 139-140.

17. Susumu Awanohara, op. cit., p. 13.

18. Ibid., p. 148.

19. Atsuki Chiba, op. cit., p. 21.

20. Toshiyuki Sasako, "EC's Criticism of Japanese 'Domination' of Markets Worsens Slump of Business," Japan Economic Journal, 1976, p. 76.

21. Ibid.

22. It need be stressed that the lifetime employment system does not apply to the entire industry, but only affects the larger shipbuilding companies, and most likely only the management-level personnel. Nonetheless, there is a real reluctance by companies to lay-off workers.

23. Tracy Dahlby, "Gloom at the Top," FEER, December 24, 1976.

24. Ibid.

25. Toshiyuki Sasoko, "1977 was Year of Great Difficulties Featuring Numerous Bankruptcies," Japan Economic Review, September 15, 1978, p. 11.

26. "Shipbuilders Plan Operation Cut," Japan Economic Review, September 15, 1978, p. 11.

27. A. G. Cullison, "Japanese Shipyards Seek Government Aid," Journal of Commerce, September 18, 1978, p. 3A.

28. Ibid.

29. Ibid.

30. Ibid.

31. Ibid.

32. "Ship Scrapping, Rebuilding is Urged as Relief Measure," The Japan Economic Journal, March 14, 1978.

33. David Tharp, "Slipping Below the Waves," FEER, December 16, 1977, p. 74.

34. A. E. Cullison, "Japanese Shipyards Seek . . . ," *op. cit.*, p. 3A.

35. In 1977 ship exports amounted to 10.1 percent of total Japanese exports. For January to August, 1978, it amounted to 7.7 percent of total exports (or $4.8 billion)

36. "MOT Plans to Push Export of Ships to Developing Countries," *Japan Economic Journal*, August 22, 1978, p. 10.

37. *Ibid.*

38. *Ibid.*

39. *Ibid.*

## APPENDIX D: THE CURRENT STATUS OF THE WESTERN EUROPEAN SHIPBUILDING INDUSTRY

### INTRODUCTION

The Western European shipbuilding industry is currently operating under serious conditions. Declines both in backlogs and in new orders as well as competitive advantages eroded by fluctuating exchange rates have replaced the traditional European domination of the global shipbuilding industry with domination by Japan and potential domination by the developing and Comecon countries.

The capacity of the Western European shipbuilding industry expanded substantially from the late 1950's and on into the early 1970's when the oil crisis and subsequent world-wide recession put a halt to new orders. In several Western European countries backlogs at year's end reached a peak in 1973 and then declined substantially through 1976.[1]

With short- and medium-term demand for new ships expected to decrease, and with backlogs similarly decreasing, the shipbuilding industry of Western Europe can be expected to find itself in an increasingly competitive situation for gaining new orders and growing excess capacity leading to problems with redundant workers.

In order to cope with the current situation, most Western Euorpean countries have attempted to aid the shipbuilding industry. These attempts are described in the following report.

### RESPONSES TO THE CURRENT SHIPBUILDING CRISIS

Attempts to assist the financially depressed shipbuilding industries have taken two main forms:

- plans and financial aid to change the physical structure of the industry.
- financial aid to increase new orders for ships.

Plans to change the physical structure of the industry run the gamut from full outright nationalization to leaving the industry as free-market-oriented as possible. Along with changing the structure of the industry, many countries are heavily subsidizing the shipbuilding industry; this action, often undertaken to defuse the politically sensitive issue of cutting back employment, generally has taken three forms: aids to counteract inflation, which allow shipyards to offer fixed-price contracts to prospective buyers; aids to encourage domestic shipowners to place orders with domestic shipyards; and aids to encourage foreign shipowners to place new orders.

## A. BRITAIN

A major change in the structure of its shipbuilding industry has been undertaken by Great Britain. On July 1, 1977, the shipbuilding industry was nationalized. However, even before the recent oil crisis, many shipyards were experiencing financial difficulties: in the 1960's certain shipyards had expanded into the construction of large liquid and dry bulk carriers, while other shipyards specialized in standardized cargo liners to replace World War II and post-War carriers. However, both sectors of the industry were disequilibrated by the cyclical nature of the demand for tankers and by the low labor costs of the Comecon and developing countries. Employment in the shipyards also seriously declined so that currently the level of shipyard employment is about 40 percent of the level of the early 1960's, and today the shipyards provide employment for 60,000 workers out of a total work force of 90,000.[2]

Thus, nationalization came to be recognized as a potential survival method. Although many workers did not favor nationalization, it was strongly preferred to closure of the shipyards and the displacement of many employees, for whom mobility into other occupations was not easy.[3] On July 1, 1977, British Shipbuilders was formed, comprising 32 shipyards capable of building both merchant and naval ships and controlling 99 percent

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and 97 percent, respectively, of naval and merchant shipbuilding.[4] Nationalization in Great Britain was undertaken "in order to preserve as much of the national shipbuilding base as possible until the chill winds of crisis have blown over."[5] Furthermore, the official policy of the government is "not to accept lightly any setbacks in capacity."[6] To carry out the nationalization program, it is expected that approximately $258 million will be required, with shareholder equity being exchanged for Treasury stock. Further capital investments of $344 million also are estimated. With government approval, British Shipbuilders will be able to borrow as much as $516 million.[7]

In order to subsidize shipyard prices and thus be a more competitive seller in the current buyer's market, the British government recently provided 65 million British pounds. As a result, 500,000 grt of new orders was received (about 60 percent of the annual capacity of British shipyards). However, this fund, which has been used primarily to keep employment at higher-than-market-demand levels, reportedly will need to be increased to 100 million British pounds per year if the present over-capacity is to be maintained indefinitely.[8]

In order to encourage domestic shipowners to place orders with domestic shipyards, the government has been attempting to put pressure on U.K. owners to make domestic purchases and is planning to offer less expensive credit for owners ordering in U.K. yards. Traditionally, however, this sort of pressure has been resisted. The government, therefore, is also considering the acceleration of Naval shipbuilding as well as the alternative of having yards build ships for either their own or the government's account. These ships than would be chartered out or stockpiled until the market for ships improves.[9]

An escalation insurance program has been set up to enable shipyards to offer fixed-price contracts to foreign and domestic owners. The escalation insurance program covers losses due to inflation, up to 18 percent. Ten percent inflation is included in the contract, 10 to 18 percent is covered by government guarantee,

and over 18 percent inflation becomes the responsibility of the shipyard.[10]

## B. SWEDEN

Nationalization in Sweden was undertaken for a quite different reason than that in Great Britain. Rather than try to preserve the shipbuilding base for as long as possible, nationalization in Sweden is being used as a method of running down and phasing out certain shipyards in as orderly a fashion as possible.[11]

The oil crisis presented a tremendous blow to the Swedish shipbuilding industry, which had ranked second in worldwide tonnage output for several years, primarily by "using advanced yard technology to build bigger tankers more rapidly and efficiently than the competition."[12] However, at the same time, the Swedish yards had concentrated on the construction of VLCC's and ULCC's; the oil crisis, therefore, was destabilizing to the industry. From 1969 until 1973, Sweden's orderbooks averaged 7.2 percent of world gross tonnage. The effects of the oil crisis can be seen by the fact that orders placed in Swedish yards were 4.4 percent and 0.6 percent, respectively, of world gross tonnage, in 1974 and in 1975.[13]

With the crisis well upon them, the shipyards gradually were nationalized, with the intent of phasing a rundown of certain Swedish shipyards. Nationalization in Sweden was undertaken by agreements between the government and various privately-owned shipyards, whereby the government increased its ownership of a formerly privately-owned shipyard in return for the placement of orders by the taken-over shipyard with Eriksberg, a large shipyard which had experienced losses due primarily to exchange rate fluctuations.[14]

In 1977 a State Shipyard Companies Group, Svenska Varv, was formed at a cost of $228.8 million. Only one shipyard, Kockums, remains outside the group. In September, 1978, the government confirmed its plans to reduce capacity in four of the shipyards; to carry out this plan, $1.5 billion in aid will be offered over a 3-

year period, with a great portion of the funds being used to insure employment in other industries in the regions where the shipyards are located.

To enable the transition to a smaller shipbuilding industry to be made more easily, a "building-for-stock" program has been established. The program provides for extending the current guarantee program from $1.07 billion to $3.25 billion and an additional $867 million in guarantees for building vessels for stock. These guarantees have become more important since most private lending institutions have not been eager to finance new shipbuilding.[15]

In order to encourage Swedish shipowners to order from Swedish shipyards, the government proposed in March, 1977 a program including 12-year guarantees which "cover 70 percent of the contract price of vessels ordered between July 1, 1977, andJune 30, 1978, for delivery before July 1, 1980."[16] Furthermore, 5-year depreciating loans have been established; these loans carry no interest or amortization charges for 5 years and correspond to 30 percent of the contract price. The loan is depreciating in that if the value of the ship increases during the period of the loan, half of the increase in value would be converted to a 7-year loan and the remaining half would be written off by the government. Direct financial aid also has been given to cover the losses of the Gotaverken and Eriksberg yards.[17]

To encourage increases in foreign demand, the Swedish Export Credit Association now makes direct loans to shipyards for financing supplier credits. Furthermore, because the capital market in Sweden is relatively small, government guarantees are provided for loans to shipyards from the Second Mortgage Institute. These guarantees enable the shipyards to secure financing in domestic and overseas capital markets. The loans are secured by second mortgages on the ships delivered and cover 25 to 30 percent of the contract price. Because of extreme appreciation in the Swiss franc (used by Sweden for export contracts) the state guarantee has been extremely helpful in securing export orders.

"The guarantee program has been utilized for virtually all exports and has been the principal vehicle employed by the Swedish government to support the shipbuilding industry."[18]

The most recent financial program, which is the largest assistance program in Western Europe, "aggregates to $5.6 million in guarantees, a potential $1.2 billion in direct aid or write-downs, and $229 million in equity and capital contributions. The overall exposure of the government and the direct aid and capital contribution represent several years worth of output by the industry at the high 1975 level."[19]

## C. FRANCE

In 1968, before the oil crisis developed, the French government, by a contractual agreement signed with the shipbuilding industry, set up a plan whereby a ceiling was set on the volume of production to be subsidized and ordained a program to "consolidate and streamline the industry."[20] Consolidation and streamlining primarily consisted of merging or phasing out several shipyards until only two large shipbuilding groups remained. As of 1977, the number of large yards being subsidized has been reduced from 14 to 5.[21]

To encourage the full implementation of the plan, the government offered financial aid in the form of investment grants which provide funds for as much as 20 percent of the cost of equipment necessary for converting small- and medium-sized shipyards to other industrial activities and for retraining shipyard employees so as to increase their mobility into other occupations. Restructuring the industry led to the conversion in the 1960's of nearly 17,000 jobs, with some layoffs occuring.[22]

With the restructuring of the industry came a specialization into sophisticated, high-expertise ships such as dry cargo, LNG and LPG carriers, and Ro/Ro. As a result, the French shipbuilding industry has not felt the effects of the oil crisis quite as deeply as other countries. At the end of 1977, the French shipbuilding

orderbook carried two million grt with a long delivery spread. However, as in other European countries, the orderbook is being worked through more quickly than it is being built up.[23]

Government subsidies in France now can account for nearly 50 percent of the price of a new ship for domestic owners. The French government has stated that only when a price differential of 10 percent exists can French shipowners place orders abroad.[24]

With respect to exports, the existence of export credit assistance, supplied from privately-owned banks with government support, allows shipyards to offer credit at favorable terms to foreign customers.[25]

## D. THE NETHERLANDS

A restructuring of the shipbuilding industry is being considered seriously in the Netherlands. According to a report of the Rhine-Schelde-Verolme Company, the country's largest shipbuilding group, "a number of drastic measures regarding the present organization are necessary. Every effort will be made to minimize the social distress, but avoiding this entirely is an impossibility."[26] Earlier this year, the government suggested that yards begin to specialize in various types of shipbuilding or repair work, some at reduced capacity. In September, 1978, the Shipbuilding Policy Committee, consisting of four government representatives, three trade union members and three employees, affirmed its viewpoint that the market can bear only one yard for the building of ships. That yard probably would be the Rhine-Schelde-Verolme which hopes to reduce shipbuilding capacity to 4.5 million man-hours annually.[27]

## E. NORWAY

Until recently, shipbuilding policy aimed at maintaining pre-1973 levels of employment. However, in March, 1977, the Norwegian government passed a special package of legislation which provided

special loans to shipyards totaling $57.4 million for 1977 and $95.4 million for each year following 1977. These loans are interest free for five years and call for a 7 percent rate for the subsequent three years. Additionally, funds for retraining workers amounting to $38.26 million will be used for salary compensation.[28]

Furthermore, by early 1977, the government had guaranteed up to two-thirds of the yards' orderbooks through the Guarantee Institute and had ordered nearly $300 million worth of vessels.[29]

## F. WEST GERMANY

In West Germany, the shipbuilding industry largely is concentrated in the North and inasmuch as the industry is not a major employer, the issue of changing the structure of the industry is not as politically sensitive as in some other countries. Furthermore, since West German shipyards had remained diversified in several types of vessel construction and had not specialized in oil tankers, the orderbook was not in as vulnerable a position as many other countries' shipbuilding industries.

However, the declining number of new orders as well as the subsidies other countries' shipbuilding industries are receiving, and its high labor costs (which now are the most expensive worldwide)[30] are having an effect on the West German shipbuilding industry. In spite of this, "the German government appears determined to preserve the European shipbuilding market as a relatively free and non-protectionistic arena no matter what the cost to its shipyards may be."[31] Some financial aid is being made available through the Eighth Shipbuilding Assistance Program, which is providing $370 million in construction grants to German owners for the purchase of new vessels.[32]

## G. DENMARK

Denmark is unusual among the Western European countries in that it is "asking for competition to be restored to an equitable

basis rather than becoming a fight to see which government could offer the biggest subsidies."[33] Denmark's orderbooks are also small but some of Denmark's capacity consists of small- and medium-sized yards which can be used for constructing specialized tonnage such as Ro/Ro ships, which are currently in demand.[34]

## H. FINLAND

Interestingly enough, the shipbuilding industry of Finland was profitable in 1977. "Total turnover for the year reached a record $625 million, $600 million of which was accounted for by exports. On order at the end of 1977 was a total of 70 ships, 3 oil rigs and 52 barges," substantially more orders than other Western European countries have.[35] Approximately 50 percent of the orderbook is for exports to the Soviet Union. For the most part, orders for special tonnage imply that most shipyards in Finland will have work until 1980; however, some layoffs already are becoming necessary, inasmuch as a major portion of the orders are for Norway, which is itself experiencing economic difficulties and, in order to protect its own shipbuilding industry, it is not expected to increase its orders from other countries.[36]

Thus, it becomes apparent that Western European governments are coming to grips with the fact that the shipbuilding industry does not face a promising future. Heavy subsidization of the shipbuilding industry has occurred and, with mid-term demand expected to remain at about the same levels or to decrease, it can be expected that such subsidization will continue, as long as governments do not lay-off redundant workers.

## THE POLICY OF THE EUROPEAN ECONOMIC COMMUNITY

The European Economic Community (EEC) has concentrated on developing a common shipbuilding policy within the "wider OECD forum,"[37] but still has not yet produced a common industrial policy

for dealing with the shipbuilding crisis. On November 4, 1977, the Fourth Directive recognized that "a sound and competitive shipbuilding industry is necessary to the Community and contributes to its economic and social development."[38]

Another proposal is the "D'Avignon Proposals" of December 6, 1977. This proposal encourages recognition of the Community's shipyards so as to make them more competitive and able to provide a significant proportion of the community fleet including a scaling down of the industry in order to meet future demand. The plan goes on further to say that the shipbuilding industry is inherently uncompetitive and that cutbacks of 75,000 jobs in the shipbuilding industry and 30,000 in industries directly related to shipbuilding are necessary--a figure which is not acceptable politically to most governments.[39]

Generally, in Western Europe, a sense of protectionism exists, with each country attempting to increase its own share of orders at great financial expense.

## PROSPECTS AND ANALYSIS

The prospects for the Western European shipbuilding industry are not particularly encouraging at this time. The one and only hopeful sign is an estimated small increase in demand for LNG and LPG carriers;[40] however, even this small increase in demand is not expected to materialize until 1981. Thus, with current problems besetting the industry, it is imperative that the Western European shipbuilding industry develop a strategy for coping with the current crisis.

Most of the current measures for dealing with the crisis are short-term, stop-gap measures, giving the appearance in many cases of merely prolonging the necessity for facing up to a long-term decreased demand. The problems, of course, are not merely those inherent to the shipbuilding industry; the existence of inflation insurance and export credits reflects the changing world economy and are reactions to world-wide inflation as well as intense

fluctuation in exchange rates. Were the problems of increased competitiveness with LDC's and Japan or exchange rate movements short-lived, increased subsidization could perhaps be justified. However, with the mid-term demand for ships expected to be low and competitiveness from LDC's and Japan expected to increase, large-scale subsidization does not seem to be the appropriate solution. The important question is: How much longer can governments continue to do this without affecting other needed services? Governments in Western Europe obviously are caught on the horns of a dilemma. Continued subsidization, which will be necessary if economically redundant firms are not closed down, will cause increasingly heavy financial burdens. On the other hand, if economically redundant firms are allowed to close down, the government will possibly be forced to deal with a large segment of displaced workers.

What makes this situation even more significant is its impact on the potential military needs of Western Europe, particularly the ability to mobilize. The continuing cutback in the size of the industry has potentially a major impact on its ability to meet surge requiremetns for repairs and possibly new construction. This, in turn, poses a serious problem for the U.S., given the current capabilities of the U.S. shipbuilding industry and its concomitant need to retrench. It would seem evident at the present time that there is a tripartite need . . . the U.S., Japan, and NATO . . . to address this very serious problem.

APPENDIX D: FOOTNOTES

1. "British Shipbuilders: What Slump?" The Economist February 11, 1978, p. 11.

2. Maritime Administration, U.S. Department of Commerce, The Maritime Aids of the Six Major Maritime Nations, 1977, p. III-43.

3. Idem.

4. British Shipbuilders, Report on Review of Affairs 1977, p. 6.

5. "Heading for a Crash, or Making a Controlled Descent?", Marine Engineering Log, August, 1978, p. 30.

6. Idem.

7. Maritime Administration, op. cit., p. III-48.

8. "British Shipbuilders: What Slump?", op. cit., p. 114.

9. Maritime Administration, op. cit., p. III-46.

10. Ibid., p. III-43.

11. "Heading for a Crash, Or Making a Controlled Descent," op. cit., p. 38.

12. Ibid. p. 34.

13. Maritime Administration, op. cit., p. V-44.

14. Ibid., p. V-49.

15. Ibid., pp. V-50, V-51.

16. Ibid., p. V-51.

17. Ibid., p. V-53.

18. Ibid., p. V-34.

19. Ibid., p. V-53.

20. Ibid., p. VII-35.

21. Idem.

22. _Ibid._, p. VII-42.

23. "Heading for a Crash, Or Making A Controlled Descent?", _op. cit._, p. 36.

24. _Ibid._, p. 42 and Maritime Administration, _op. cit._, p. VII-51.

25. Maritime Administration, _op. cit._, pp. VII-37, VII-40, VII-41.

26. "Heading For A Crash, Or Making A Controlled Descent," _op. cit._, p. 40.

27. "Shipbuilding Industry Hurting," _The Journal of Commerce_, September 18, 1978, p. 14A.

28. Maritime Administration, _op. cit._, p. IV-49.

29. _Ibid._, p. IV-50.

30. "Keener Competition, New Order Decline Burden Shipyards," _The Journal of Commerce_, September 18, 1978, p. 3B.

31. Maritime Administration, _op. cit._, p. VI-50.

32. _Idem._

33. "Heading For A Crash, Or Making A Controlled Descent?", _op. cit._, p. 36.

34. _Idem._

35. _Ibid._, p. 36.

36. _Ibid._, pp. 36-38.

37. British Shipbuilders, _op. cit._, p. 12.

38. "Heading For A Crash, Or Making A Controlled Descent," _op. cit._, pp. 31-32.

39. _Idem._

40. Nicholas Blenkey, "European Gas Carrier Building: Still Waiting For The Upswing," _Marine Engineering/Log_, October, 1978, pp. 45-46. It should also be noted that a recent study mentioned in this article showed that only 36 ships will be needed _worldwide_ between 1981 and 1985.